[redacted]

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DATA REPORT FOR EXPERIMENTAL HEAT TRANSFER DISTRIBUTIONS OVER LAUNCH AND ENTRY CONFIGURATIONS ON THE 0.045-SCALE APOLLO MODEL (H-2) WITH THE ADDITION OF STRAKES AT A MACH NUMBER OF 10 (U)

NAS9-150

February 1964 Volume 2 (of 6)

Exhibit I, Paragraph 5.5

CLASSIFICATION CHANGE

To UNCLASSIFIED

By authority of DOD Dir 5200.10 Date 12/3/62

Changed by L. Shirley

Classified Document Master Control Station, NASA

Scientific and Technical Information Facility

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NORTH AMERICAN AVIATION, INC.
SPACE and INFORMATION SYSTEMS DIVISION

[redacted]

[redacted]

[redacted]

[redacted]

LEGEND

CONFIGURATION

1 - $E_{43}T_{27}C_2L_{28}S_6I_1B_8$

11 - $E_{43}T_{27}C_2L_{28}S_6R_5I_1B_8$

2 - $C_2L_{28}S_2$

21 - $C_2L_{28}S_2R_5$

22 - $C_2L_{28}S_2{}^{+t}{}_r$

23 - $C_2L_{28}S_2R_5{}^{+t}{}_r$

30 - C_2L_{28}

31 - $C_2L_{28}{}^{+t}{}_{r15}$

32 - C_2

α = Angle of Attack ~ Deg

ϕ = Angle of Roll ~ Deg

ψ = Angle of Yaw ~ Deg

Re/in. x 10^{-6} = Reynold Number Per Inch

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PLOTS

A) - Model Heat Transfer Data Q vs s/r

B) - Model Heat Transfer Data H^*/H^*_o vs s/r

C) - Model Heat Transfer Data Q vs s^*/r, H^*/H^*_o vs s^*/r

D) - Strake Heat Transfer Data Q vs s^*/r, H^*/H^*_o vs s^*/r

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PLOTTED DATA INDEX

Configuration	Group Number	α (Deg)	ϕ (Deg)	ψ (Deg)	Re/in. x 10^{-6}	Plots	Page No.
1	10	0	0	0	0.027	A,B,D	A-6 - A-11
1	14	0	0	0	0.027	A,B,D	A-12 - A-17
1	11	5	0	0	0.027	A,B,D	A-18 - A-23
1	12	10	0	0	0.027	A,B,D	A-24 - A-29
1	13	15	0	0	0.027	A,B,D	A-30 - A-35
1	15	0	0	0	0.054	A,B,D	A-36 - A-41
1	19	0	0	0	0.054	A,B,D	A-42 - A-47
1	16	5	0	0	0.054	A,B,D	A-48 - A-53
1	17	10	0	0	0.054	A,B,D	A-54 - A-59
1	18	15	0	0	0.054	A,B,D	A-60 - A-65
1	30	0	0	0	0.083	A,B,D	A-66 - A-71
1	34	0	0	0	0.083	A,B,D	A-72 - A-77
1	35	0	180	0	0.083	A,B,D	A-78 - A-83
1	31	5	0	0	0.083	A,B,D	A-84 - A-89
1	32	10	0	0	0.083	A,B,D	A-90 - A-95
1	33	15	0	0	0.083	A,B,D	A-96 - A-101
1	36	0	0	0	0.166	A,B,D	A-102 - A-105
1	40	0	0	0	0.166	A,B,D	A-106 - A-111
1	37	5	0	0	0.166	A,B,D	A-112 - A-117
1	38	10	0	0	0.166	A,B,D	A-118 - A-123
1	39	15	0	0	0.166	A,B,D	A-124 - A-127
11	1	0	0	0	0.027	A,B	A-128 - A-131
11	5	0	0	0	0.027	A,B	A-132 - A-135
11	8	0	0	0	0.027	A,B	A-136 - A-139
11	2	5	0	0	0.027	A,B	A-140 - A-143
11	6	5	0	0	0.027	A,B	A-144 - A-147
11	3	10	0	0	0.027	A,B	A-148 - A-151
11	7	10	0	0	0.027	A,B	A-152 - A-155
11	4	15	0	0	0.027	A,B	A-156 - A-159

PLOTTED DATA INDEX (Cont)

Configuration	Group Number	α (Deg)	ϕ (Deg)	ψ (Deg)	Re/in. x 10^{-6}	Plots	Page No.
11	9	15	0	0	0.027	A,B	A-160 - A-163
11	20	0	0	0	0.054	A,B	A-164 - A-167
11	24	0	0	0	0.054	A,B	A-168 - A-171
11	21	5	0	0	0.054	A,B	A-172 - A-175
11	22	10	0	0	0.054	A,B	A-176 - A-179
11	23	15	0	0	0.054	A,B	A-180 - A-183
11	25	0	0	0	0.083	A,B	A-184 - A-187
11	29	0	0	0	0.083	A,B	A-188 - A-191
11	26	5	0	0	0.083	A,B	A-192 - A-195
11	27	10	0	0	0.083	A,B	A-196 - A-199
11	28	15	0	0	0.083	A,B	A-200 - A-203
11	41	0	0	0	0.166	A,B	A-204 - A-207
11	45	0	0	0	0.166	A,B	A-208 - A-211
11	42	5	0	0	0.166	A,B	A-212 - A-215
11	43	10	0	0	0.166	A,B	A-216 - A-219
11	44	15	0	0	0.166	A,B	A-220 - A-223
2	172	0	0	0	0.027	A,B,D	A-224 - A-229
2	173	5	0	0	0.027	A,B,D	A-230 - A-235
2	174	10	0	0	0.027	A,B,D	A-236 - A-241
2	175	15	0	0	0.027	A,B,D	A-242 - A-247
2	160	0	0	0	0.054	A,B,D	A-248 - A-253
2	161	5	0	0	0.054	A,B,D	A-254 - A-359
2	162	10	0	0	0.054	A,B,D	A-260 - A-265
2	163	15	0	0	0.054	A,B,D	A-266 - A-271
2	156	0	0	0	0.083	A,B,D	A-272 - A-277
2	157	5	0	0	0.083	A,B,D	A-278 - A-283
2	158	10	0	0	0.083	A,B,D	A-284 - A-289
2	159	15	0	0	0.083	A,B,D	A-290 - A-295

PLOTTED DATA INDEX (Cont)

Configuration	Group Number	α (Deg)	ϕ (Deg)	ψ (Deg)	Re/in. x 10^{-6}	Plots	Page No.
21	168	0	0	0	0.027	A, B, D	A-296 - A-301
21	169	5	0	0	0.027	A, B, D	A-302 - A-308
21	170	10	0	0	0.027	A, B, D	A-309 - A-313
21	171	15	0	0	0.027	A, B, D	A-314 - A-319
21	164	0	0	0	0.054	A, B, D	A-320 - A-325
21	165	5	0	0	0.054	A, B, D	A-326 - A-331
21	166	10	0	0	0.054	A, B, D	A-332 - A-337
21	167	15	0	0	0.054	A, B, D	A-338 - A-343
21	152	0	0	0	0.083	A, B, D	A-344 - A-349
21	153	5	0	0	0.083	A, B, D	A-350 - A-355
21	154	10	0	0	0.083	A, B, D	A-356 - A-361
21	155	15	0	0	0.083	A, B, D	A-362 - A-367
22	127	0	0	0	0.027	A, B, D	A-368 - A-373
22	128	5	0	0	0.027	A, B, D	A-374 - A-379
22	129	10	0	0	0.027	A, B, D	A-380 - A-385
22	130	15	0	0	0.027	A, B, D	A-386 - A-391
22	139	0	0	0	0.054	A, B, D	A-392 - A-397
22	140	5	0	0	0.054	A, B, D	A-398 - A-403
22	141	10	0	0	0.054	A, B, D	A-404 - A-409
22	142	15	0	0	0.054	A, B, D	A-410 - A-415
22	143	0	0	0	0.083	A, B, D	A-416 - A-421
22	144	5	0	0	0.083	A, B, D	A-422 - A-427
22	145	10	0	0	0.083	A, B, D	A-428 - A-433
22	146	15	0	0	0.083	A, B, D	A-434 - A-439
23	131	0	0	0	0.027	A, B, D	A-440 - A-443
23	132	5	0	0	0.027	A, B, D	A-444 - A-447
23	133	10	0	0	0.027	A, B, D	A-448 - A-451
23	134	15	0	0	0.027	A, B, D	A-452 - A-455
23	135	0	0	0	0.054	A, B, D	A-456 - A-459

PLOTTED DATA INDEX (Cont)

Configuration	Group Number	α (Deg)	ϕ (Deg)	Ψ (Deg)	Re/in. x 10^{-6}	Plots	Page No.
23	136	5	0	0	0.054	A, B, D	A-460 - A-463
23	137	10	0	0	0.054	A, B, D	A-464 - A-467
23	138	15	0	0	0.054	A, B, D	A-468 - A-471
23	147	0	0	0	0.083	A, B, D	A-472 - A-475
23	148	5	0	0	0.083	A, B, D	A-476 - A-479
23	149	10	0	0	0.083	A, B, D	A-480 - A-483
23	150	15	0	0	0.083	A, B, D	A-484 - A-487

[redacted]

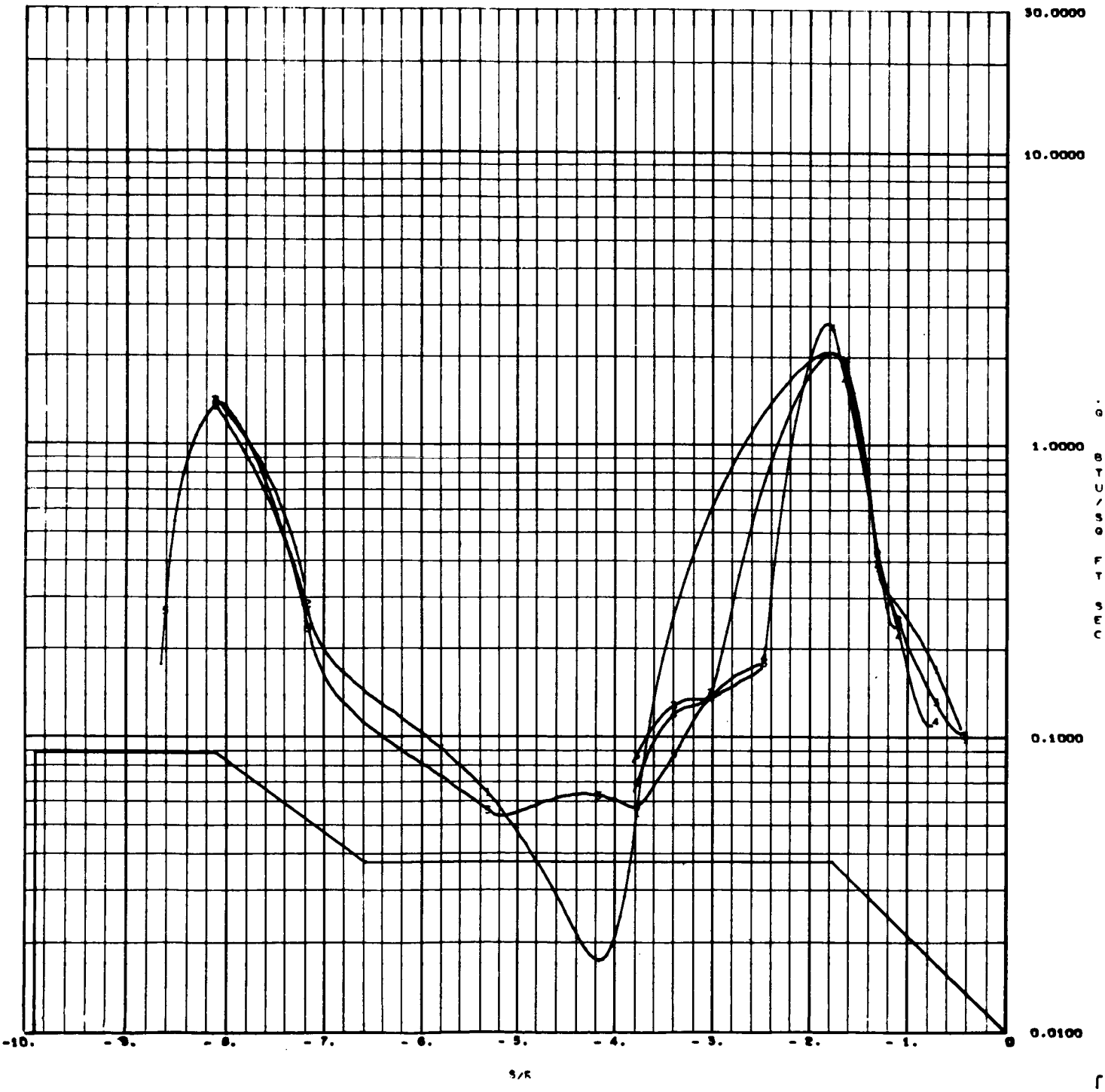
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 10
TOTAL PRESSURE 215.7 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

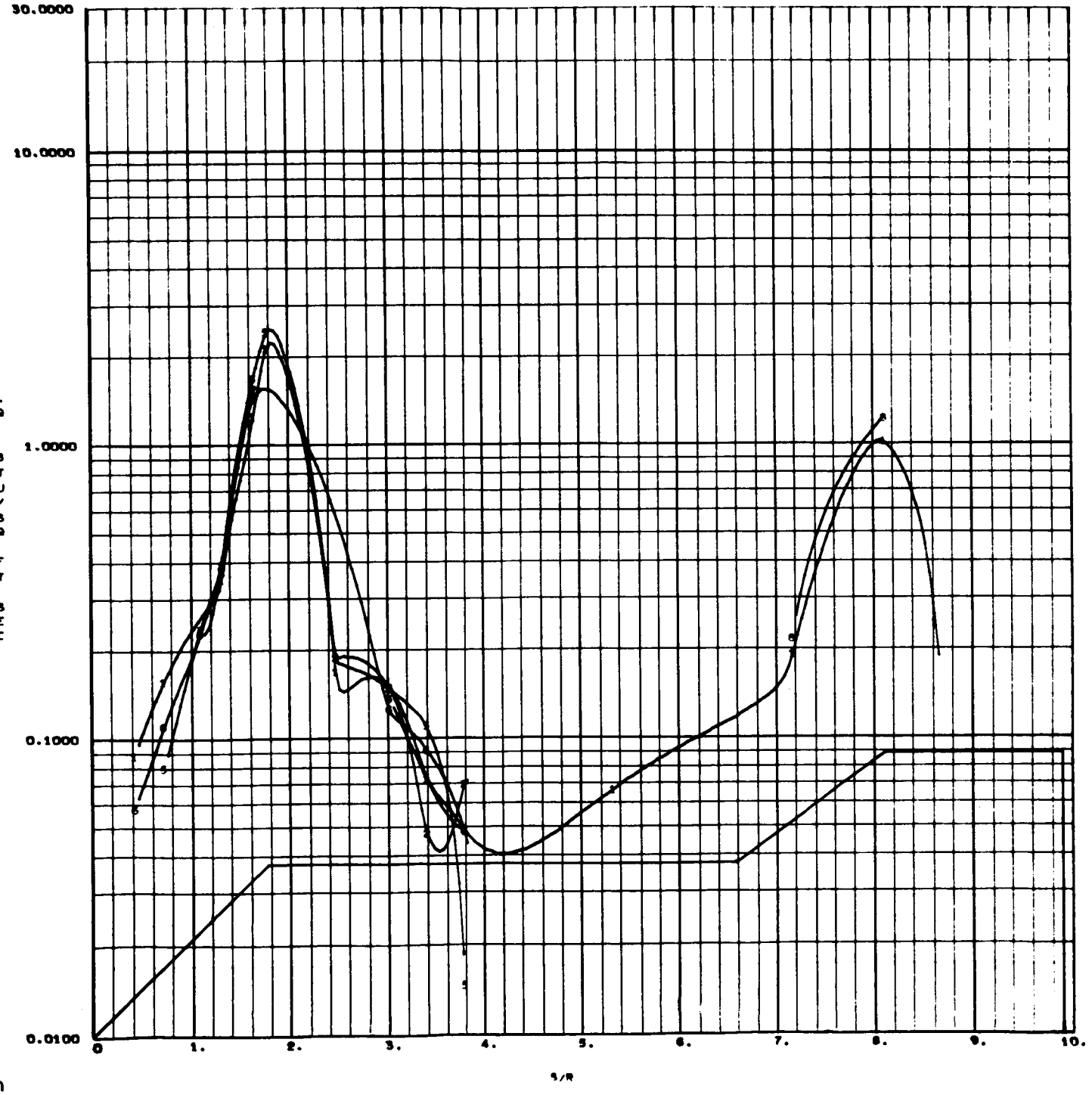
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 10
TOTAL PRESSURE 215.7 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 10
TOTAL PRESSURE 215.7 PSIA
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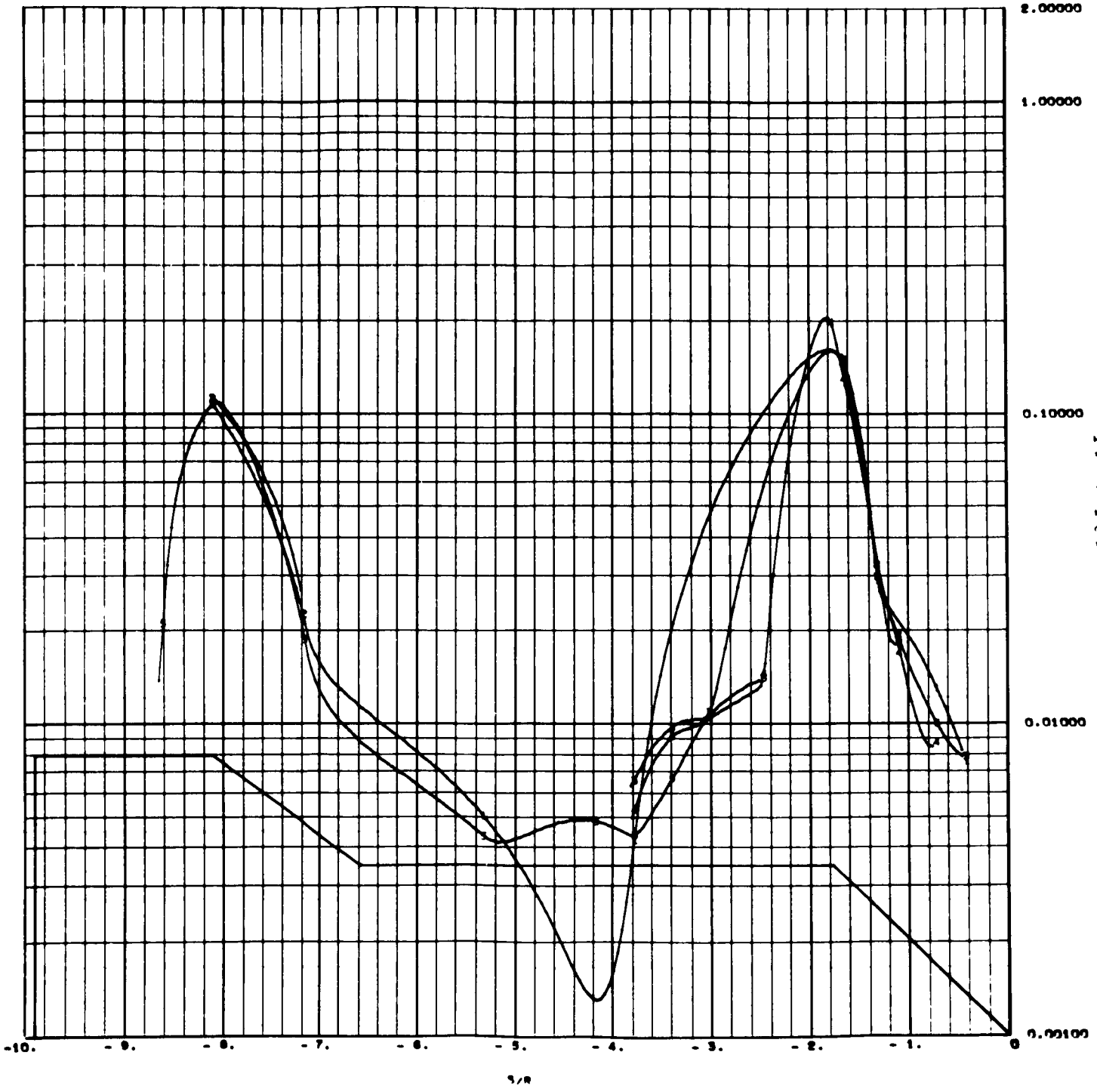
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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HEAT TRANSFER TEST

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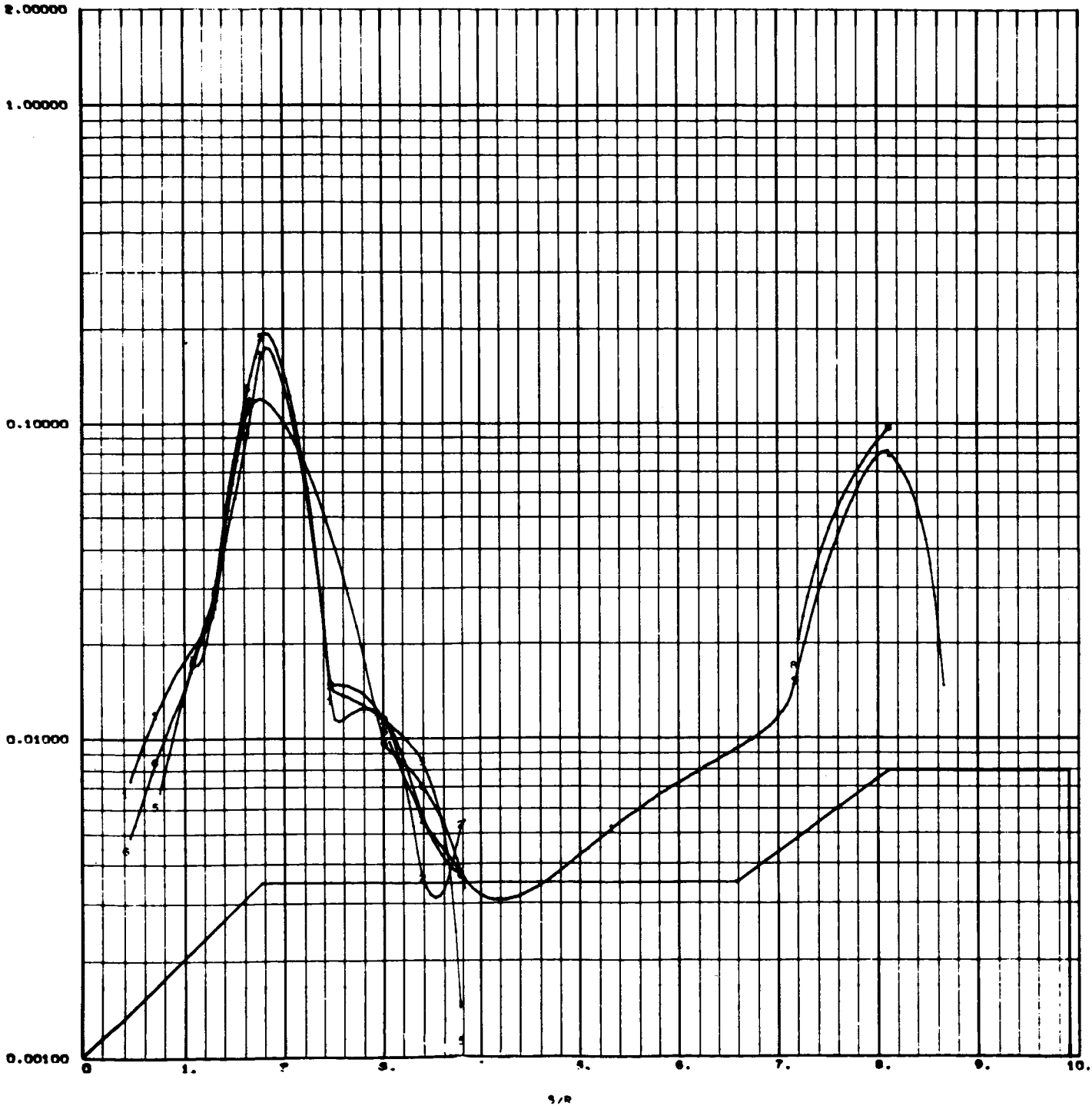
PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

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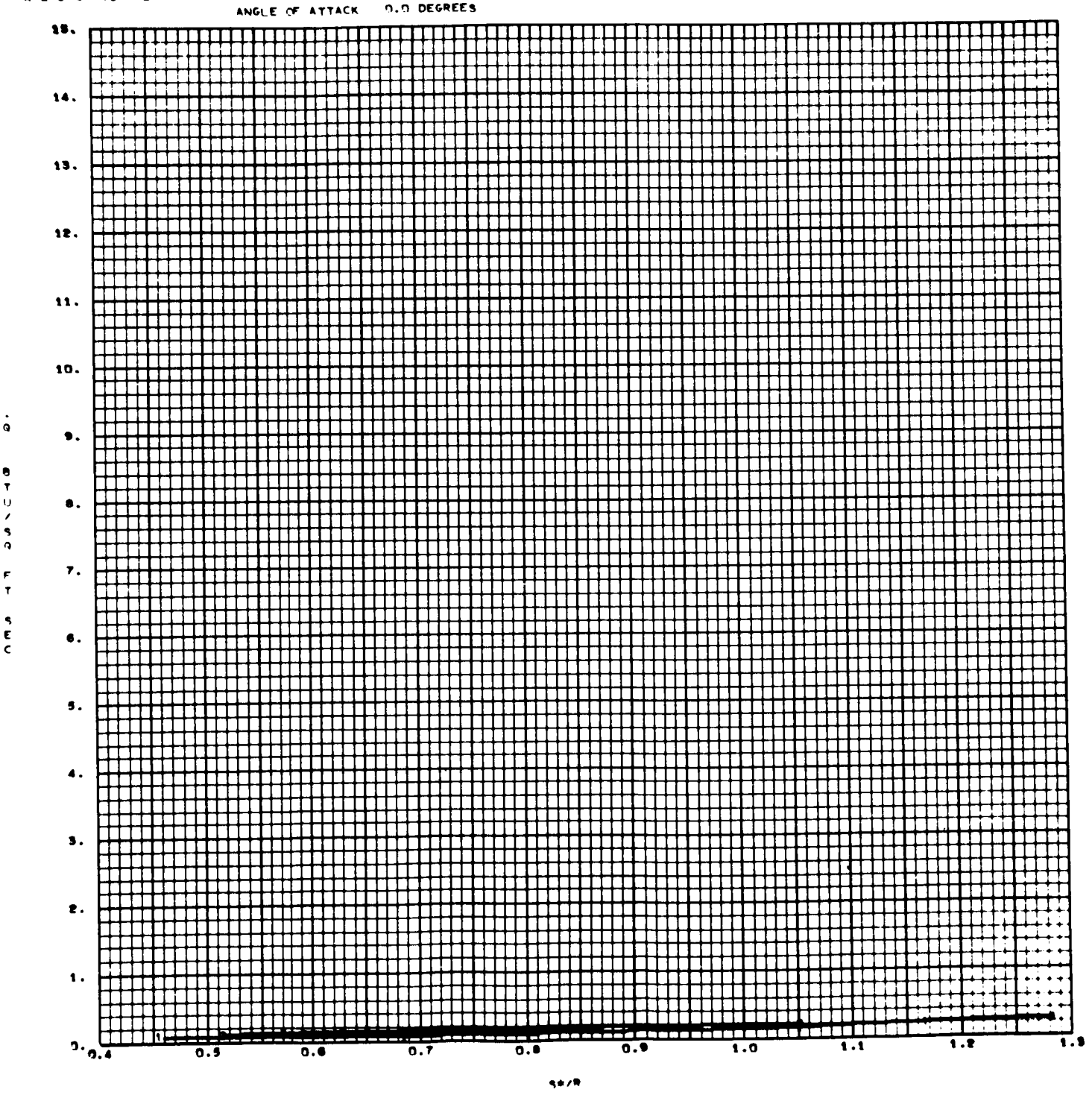
PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 10
TOTAL PRESSURE 215.7 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
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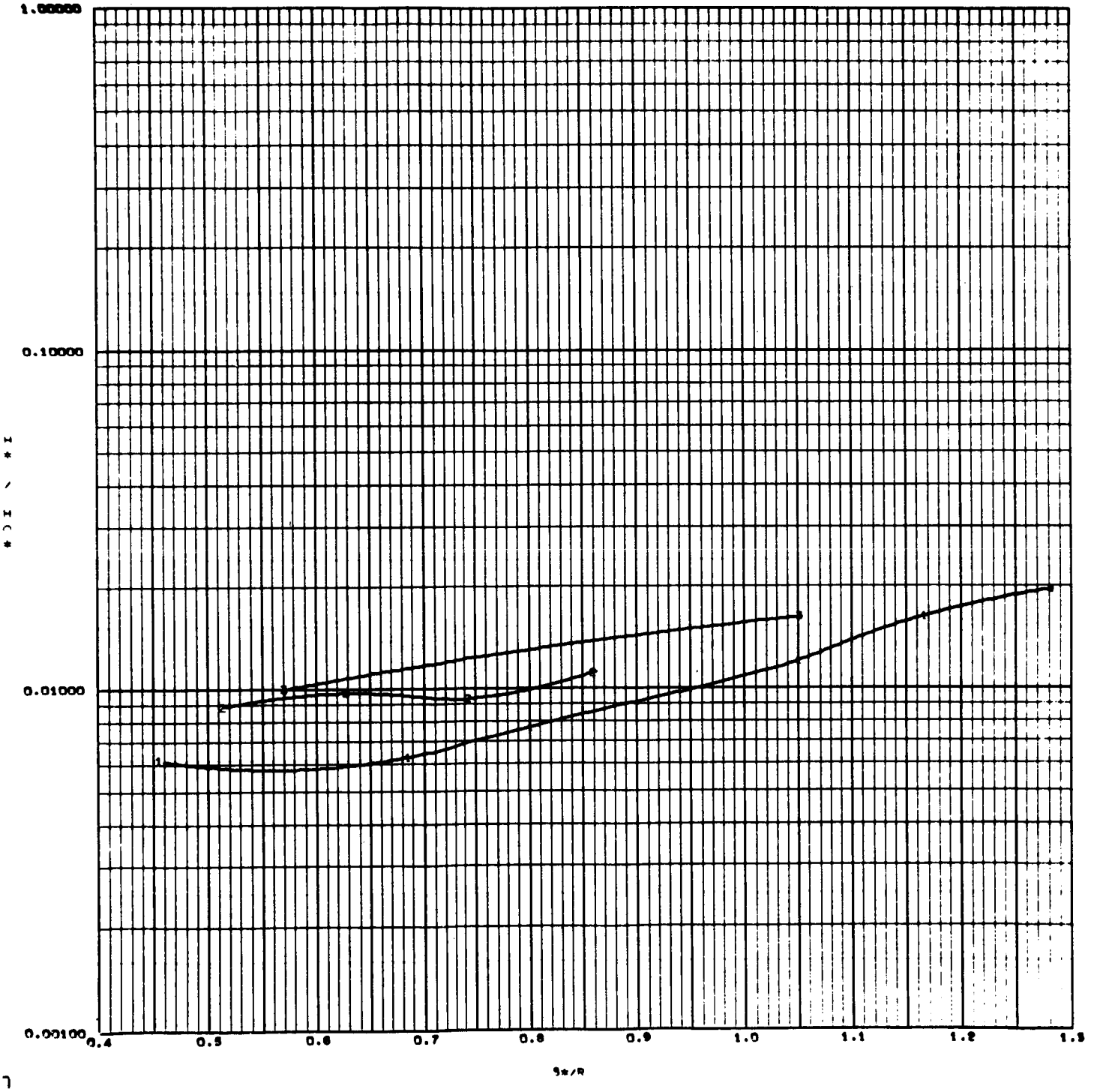
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

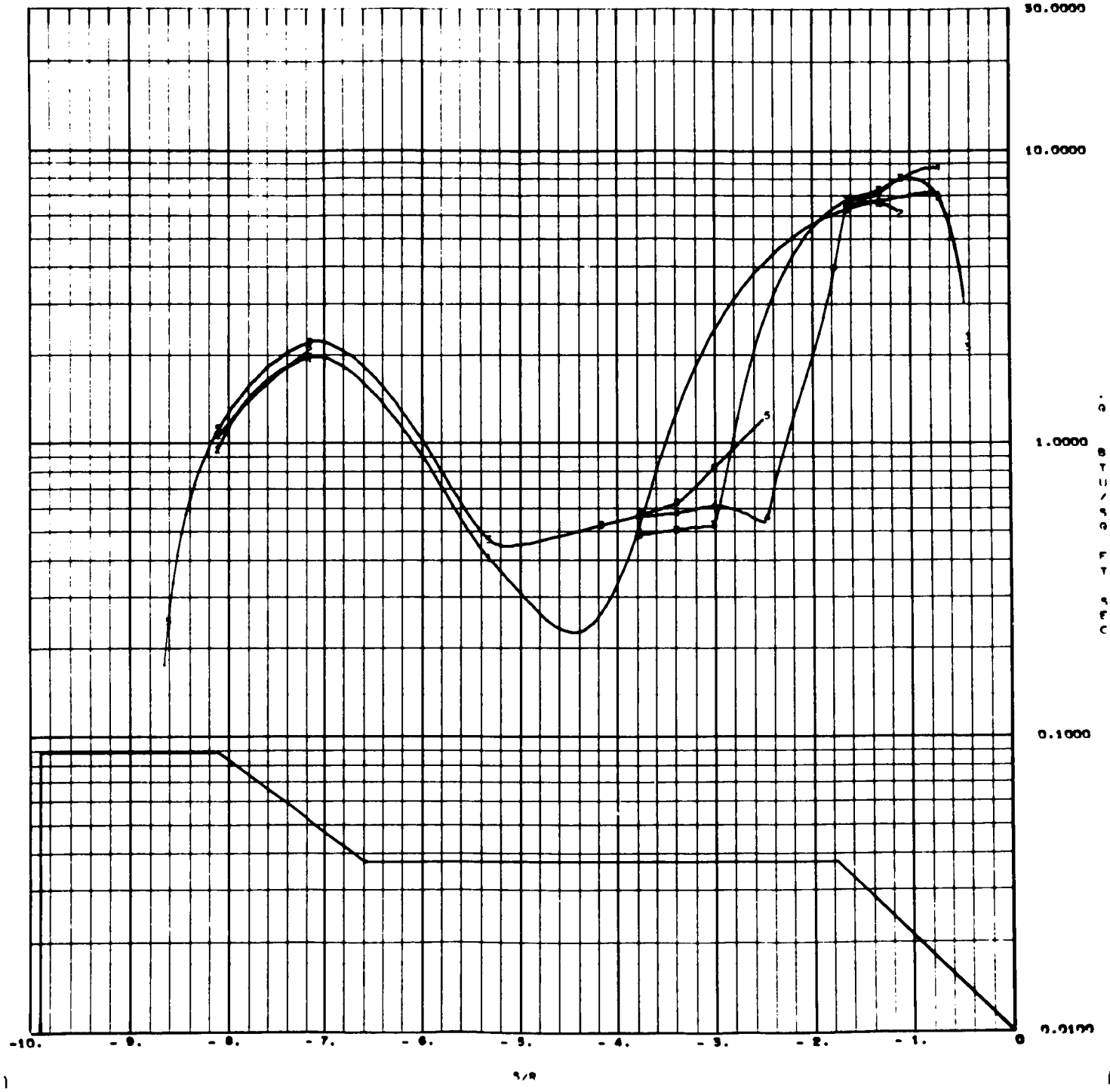
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 14
TOTAL PRESSURE 214.2 PSIA
REYNOLDS NUMBER PER INCH 0.0282 x 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

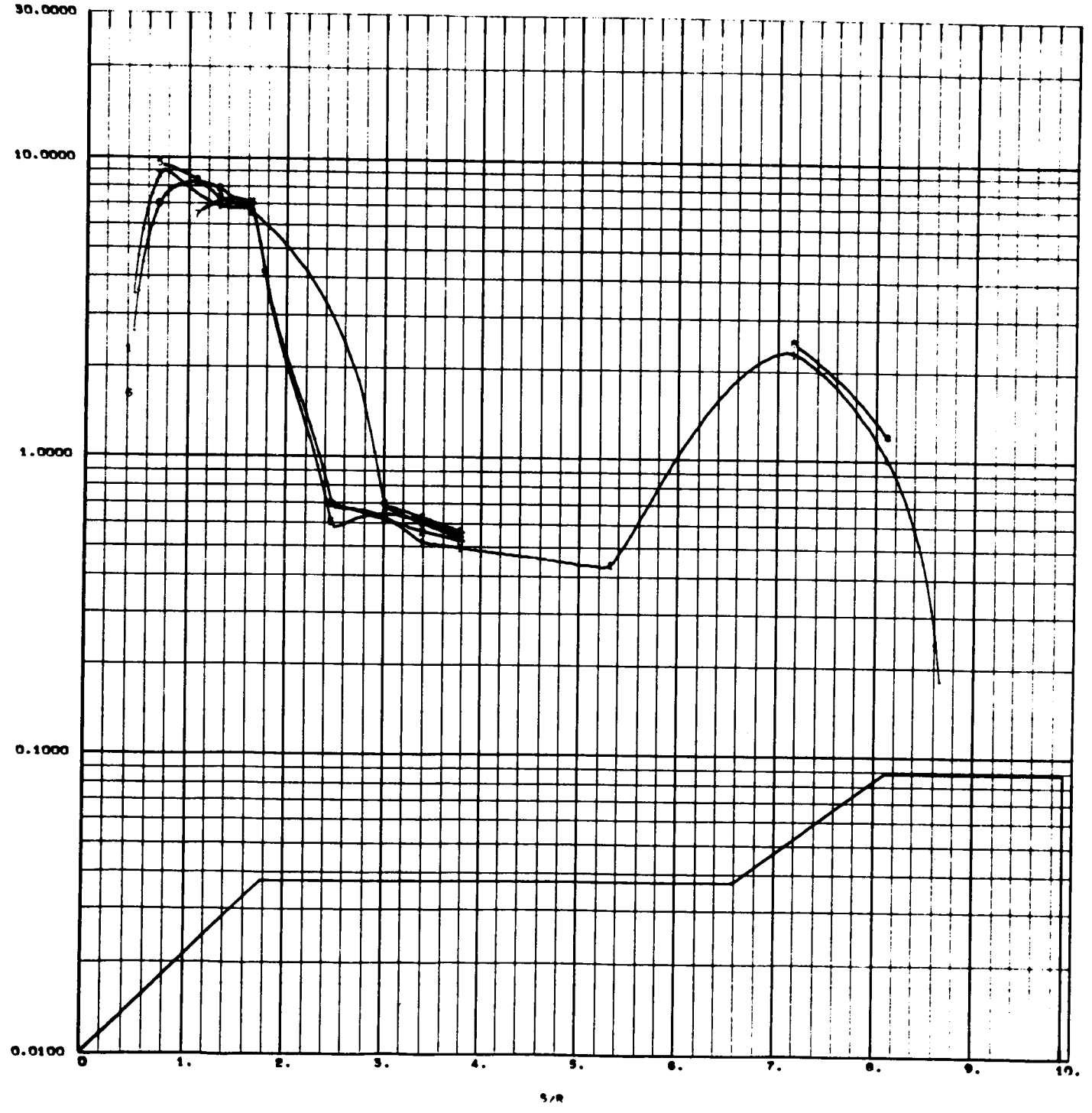
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 14
TOTAL PRESSURE 214.2 PSIA
REYNOLDS NUMBER PER INCH 0.0282 x 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1642.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 14
TOTAL PRESSURE 214.2 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
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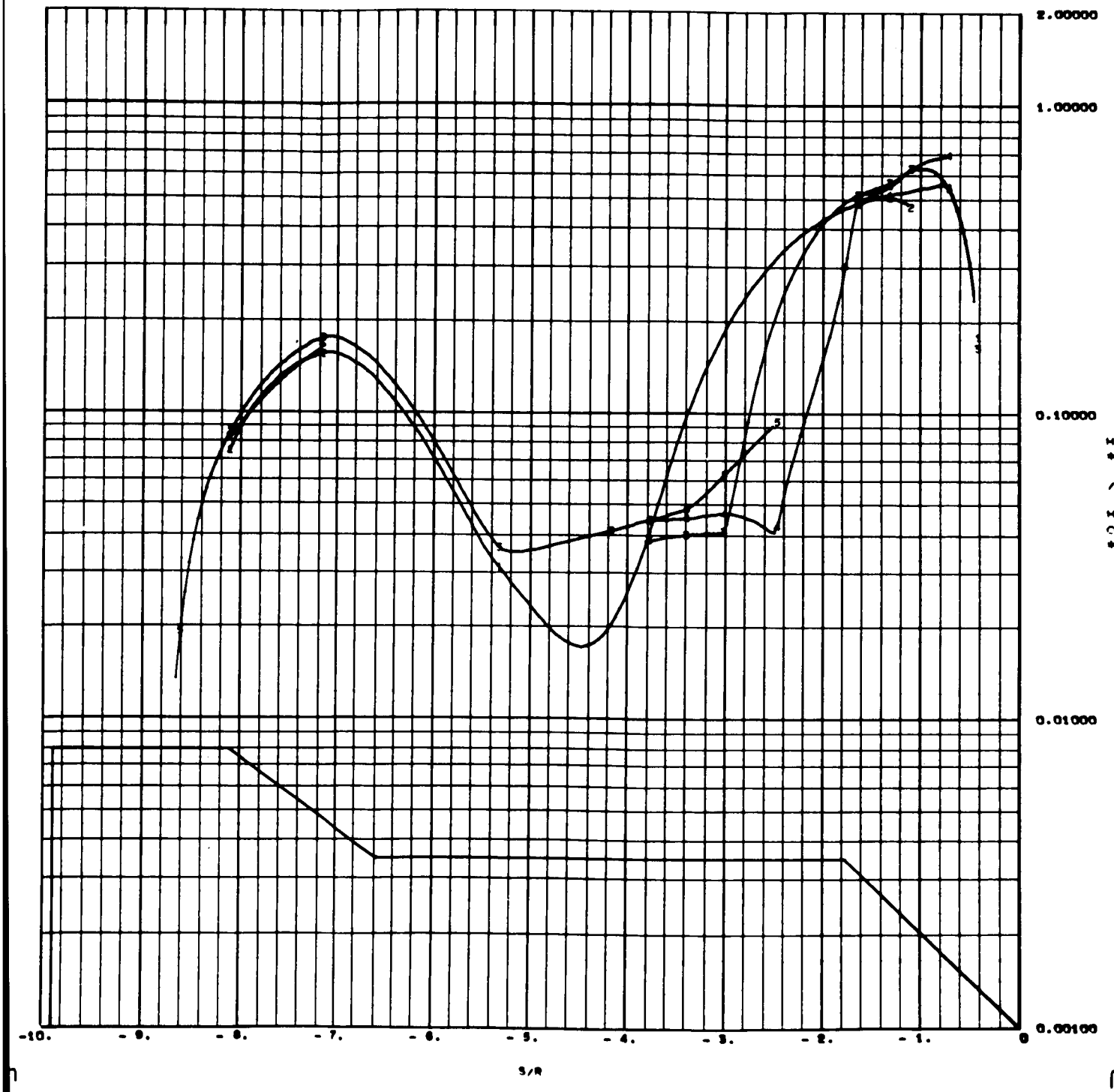
TOTAL TEMPERATURE 1642.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

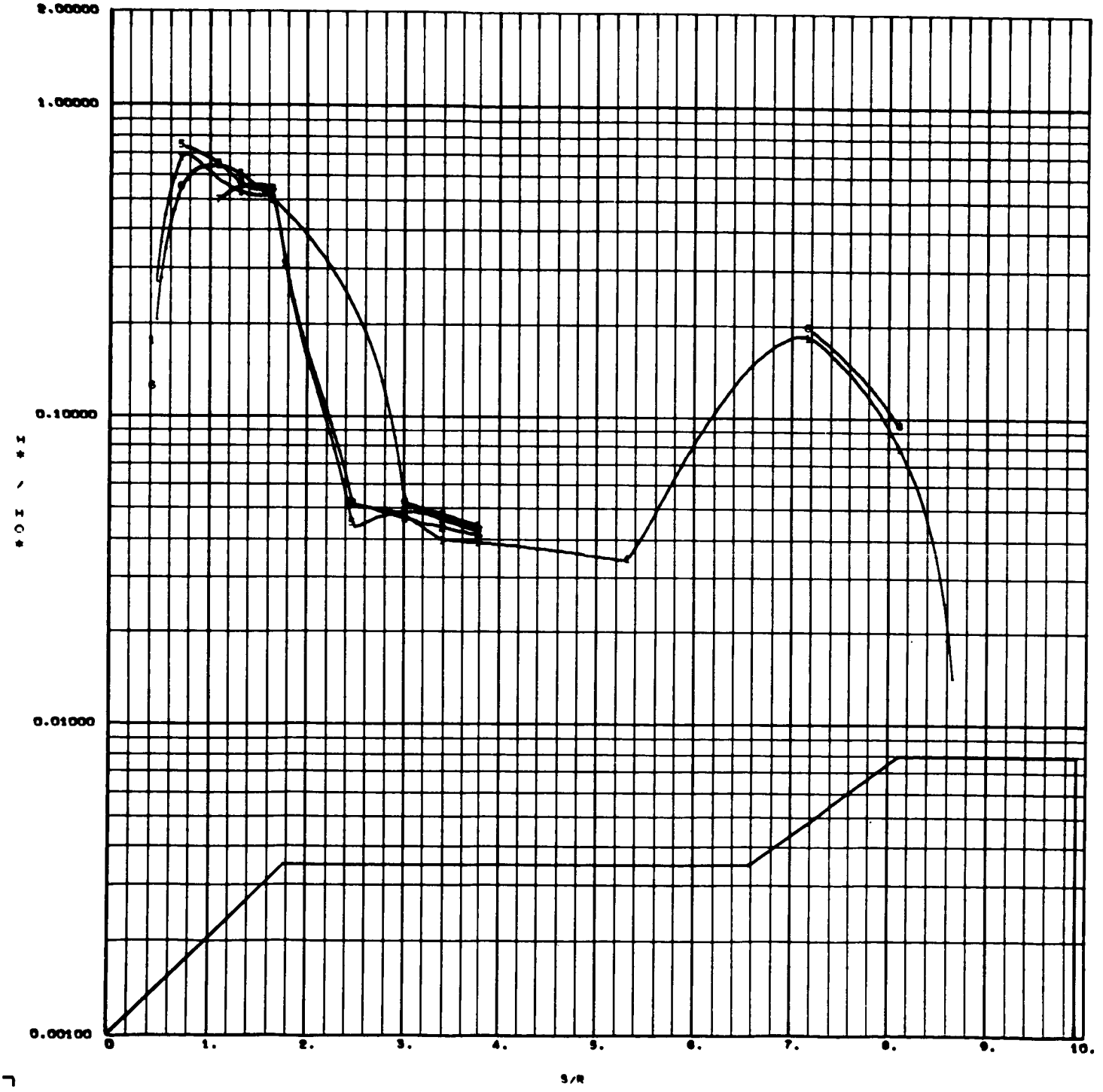
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 14
TOTAL PRESSURE 214.2 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

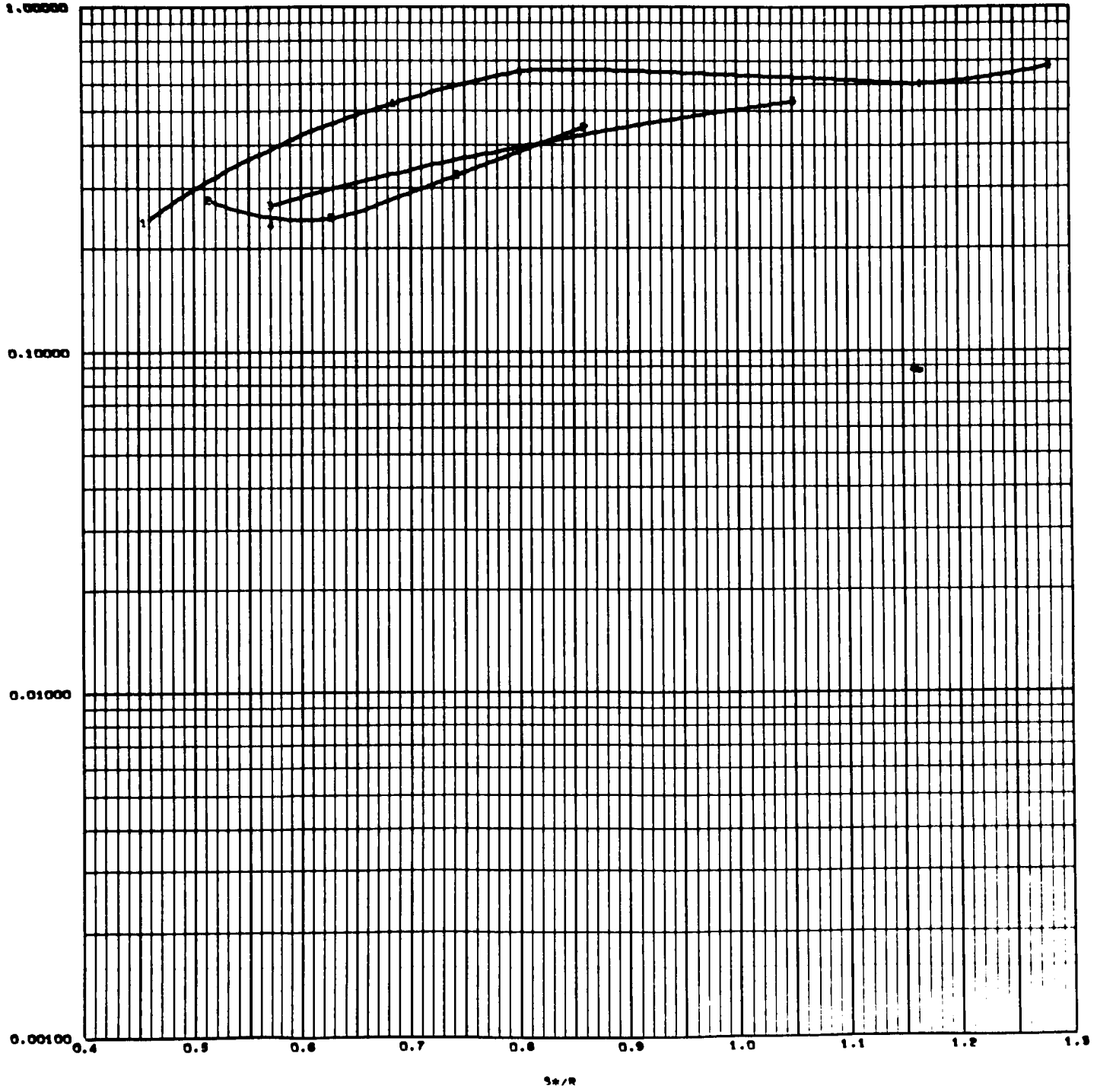
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 14
TOTAL PRESSURE 214.2 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 14
TOTAL PRESSURE 214.2 PSIA
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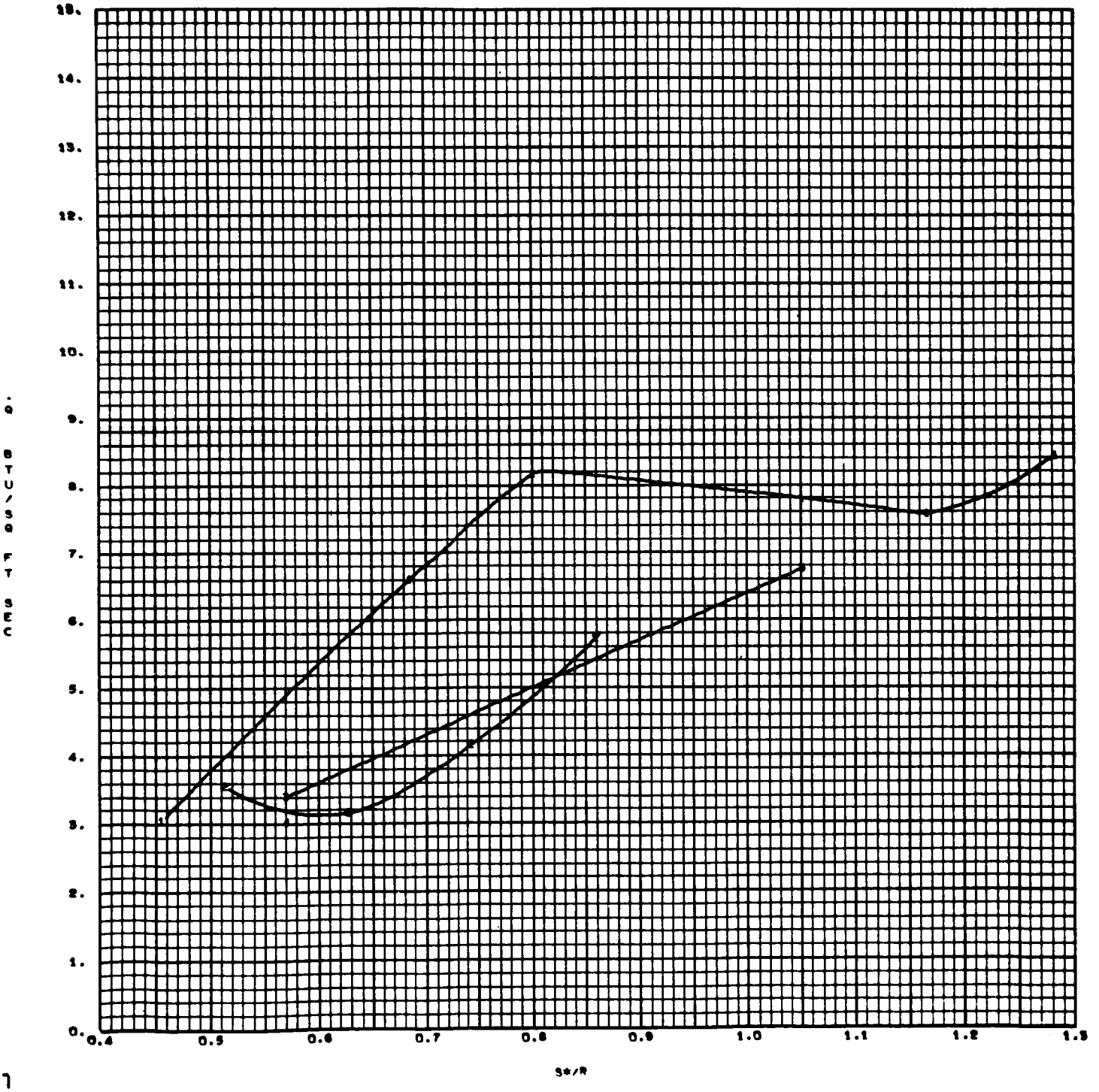
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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[redacted]

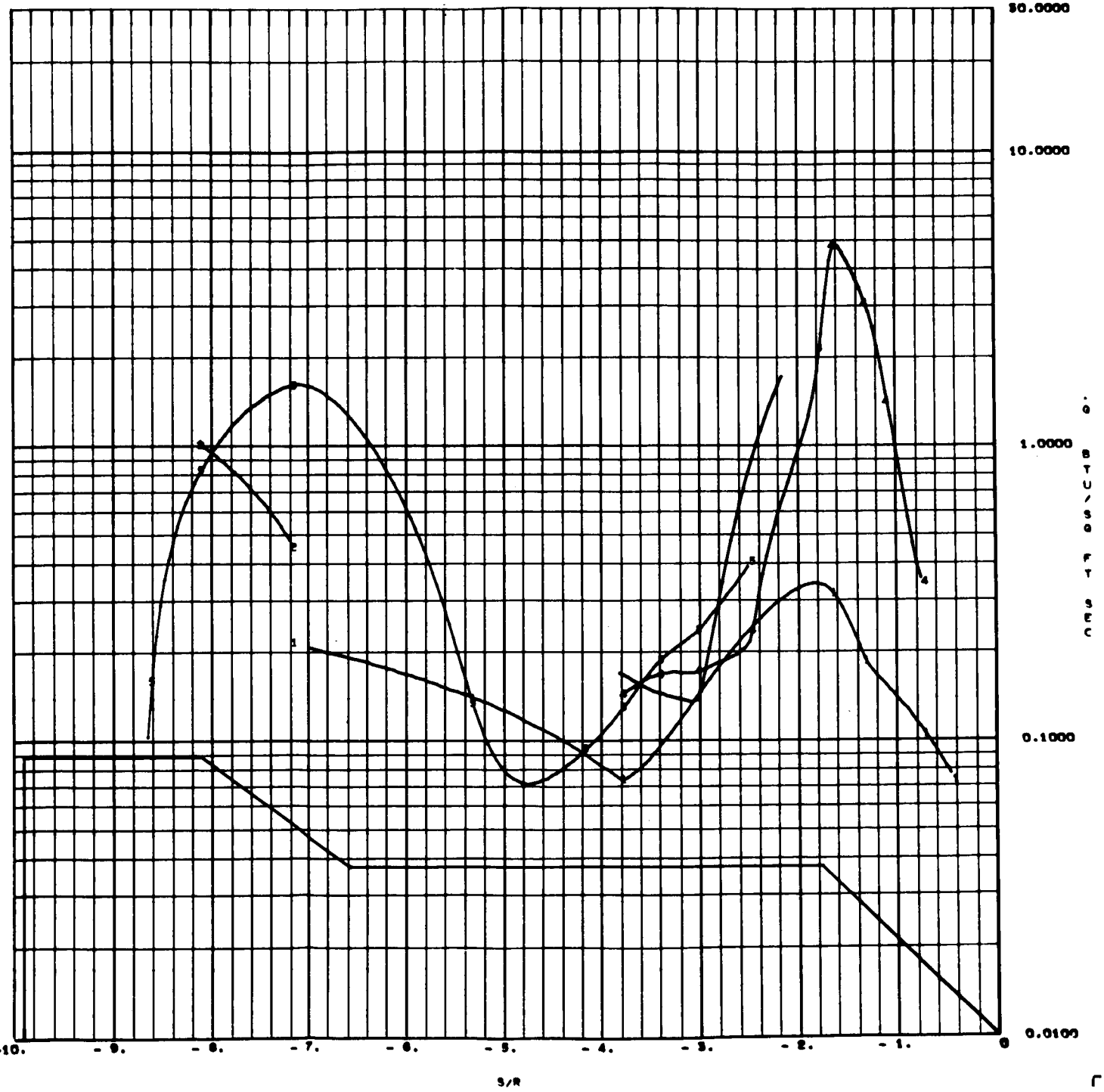
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 11
TOTAL PRESSURE 216.7 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1634.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

~~CONFIDENTIAL~~

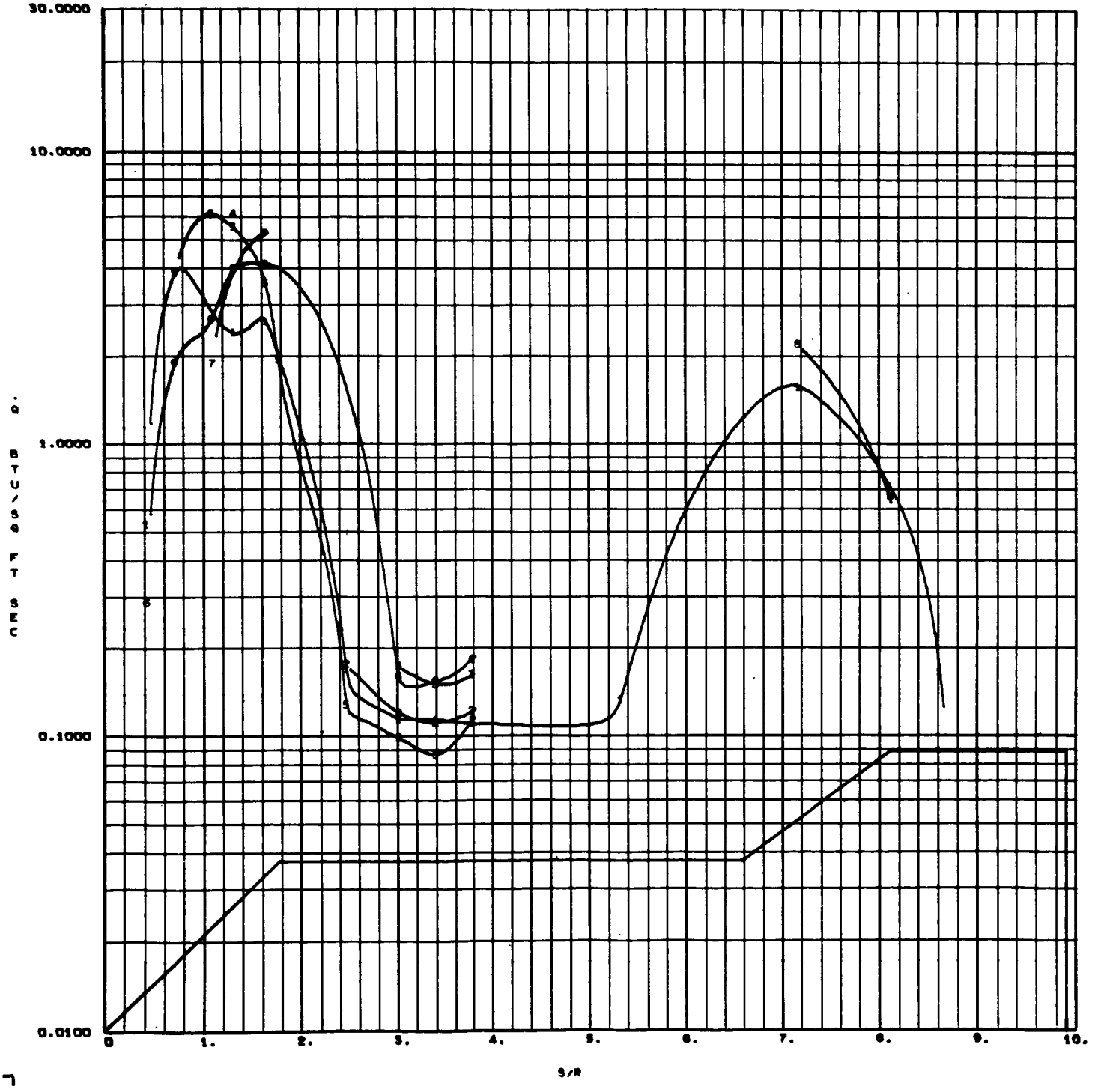
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 11
TOTAL PRESSURE 216.7 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1634.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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[redacted]

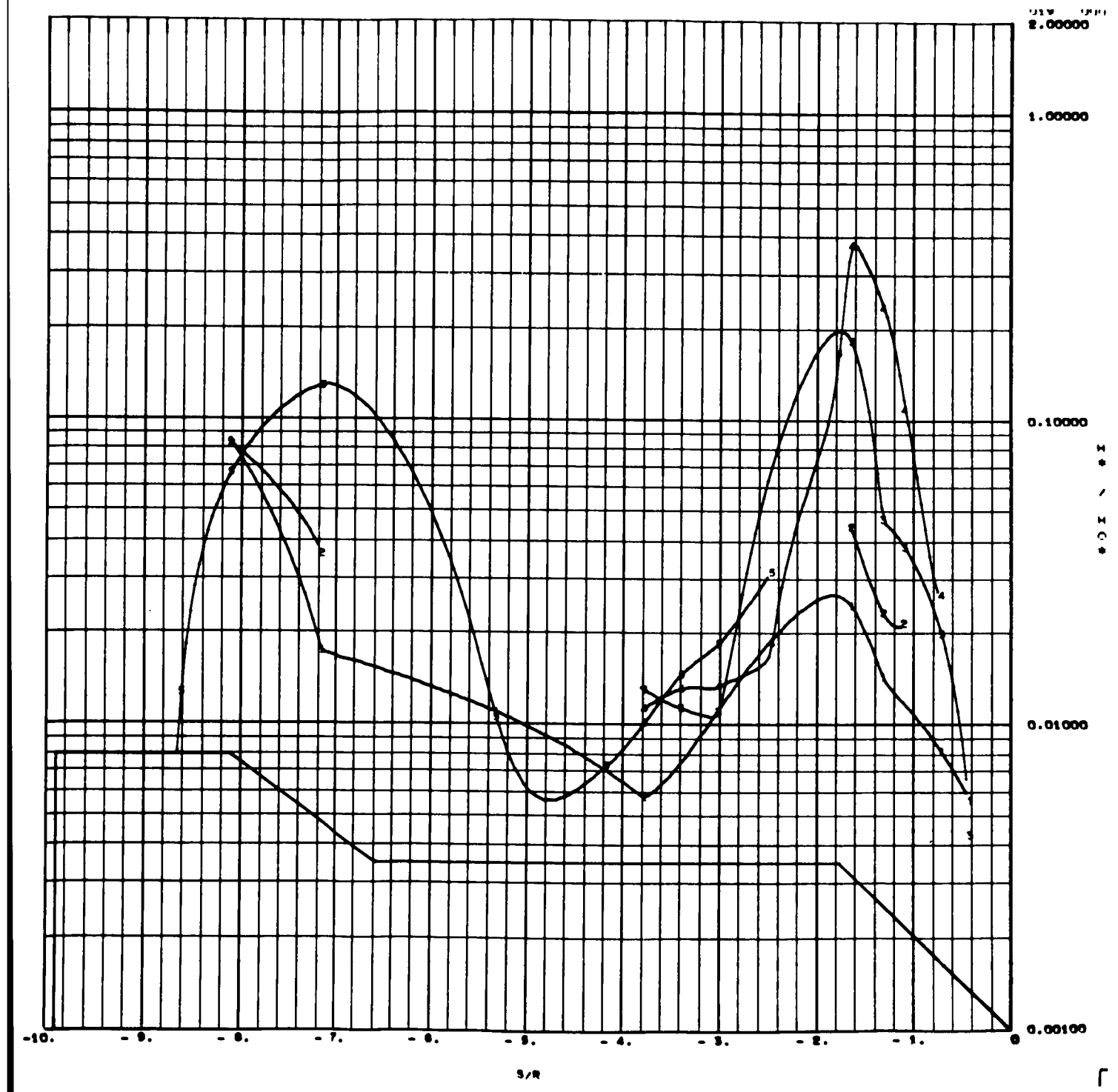
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 11
TOTAL PRESSURE 216.7 PSIA
REYNOLDS NUMBER PER INCH 0.0288 x 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1634.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

~~CONFIDENTIAL~~

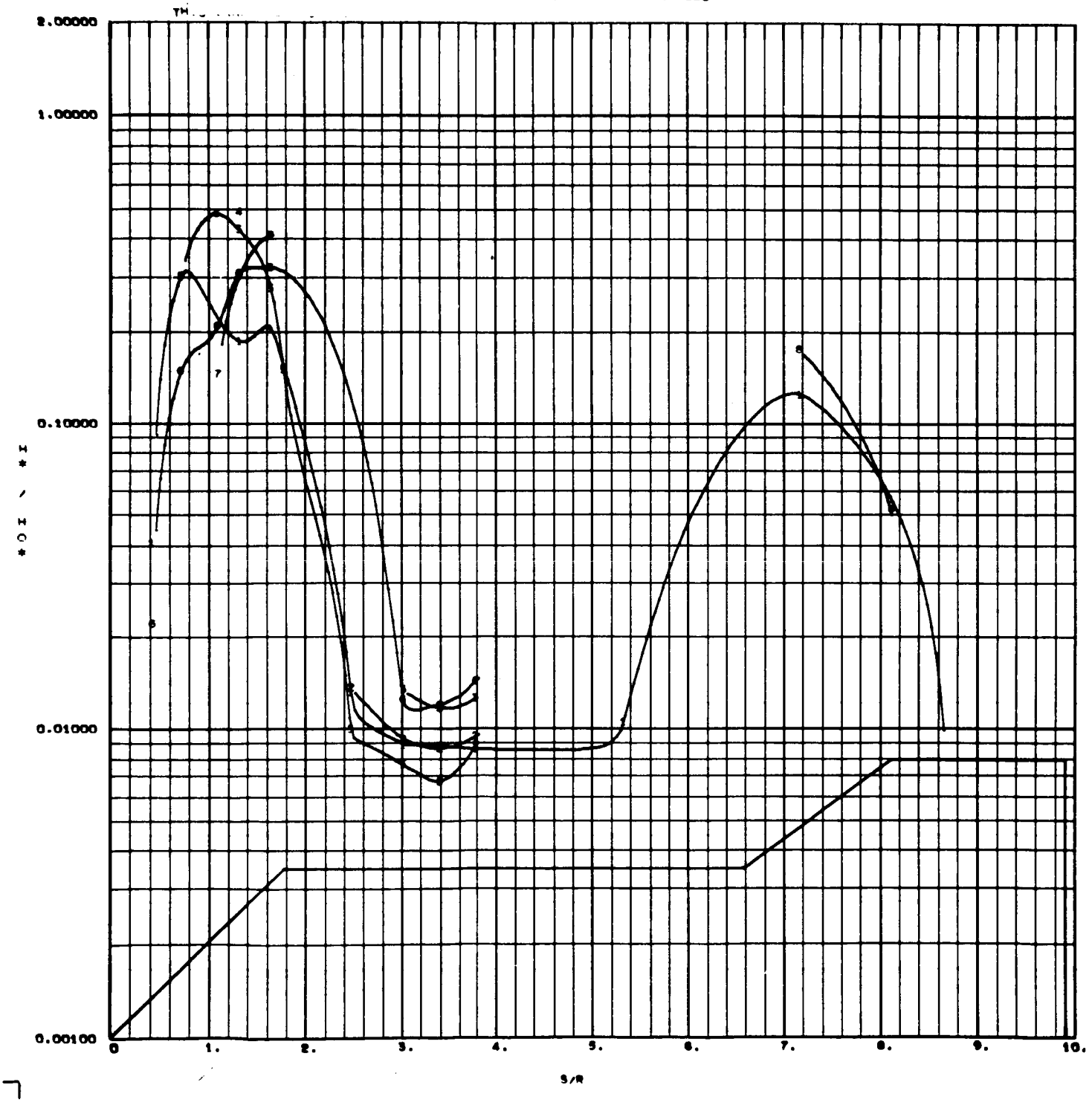
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 11
TOTAL PRESSURE 216.7 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1634.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



~~CONFIDENTIAL~~

[redacted]

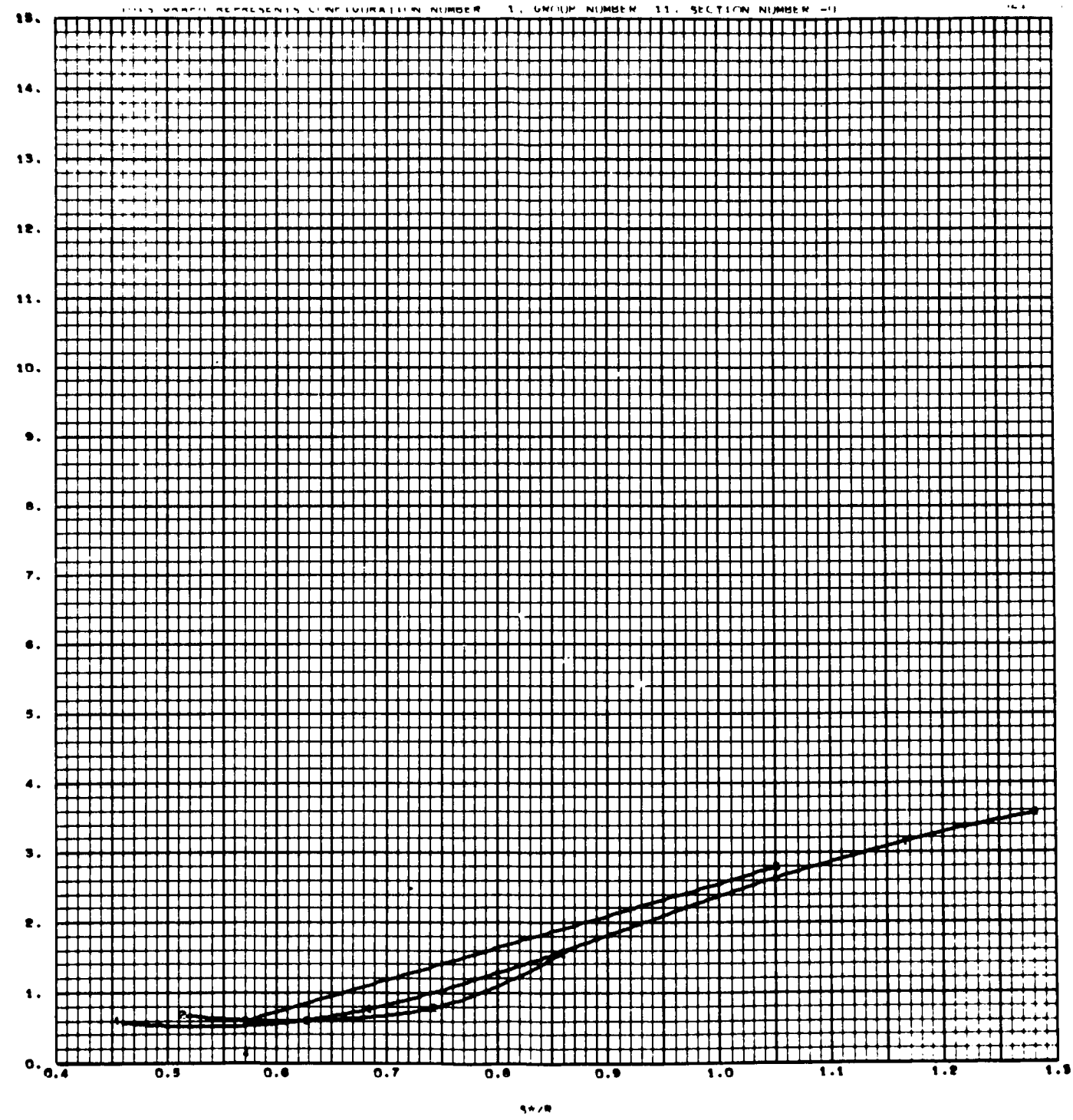
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 11
TOTAL PRESSURE 216.7 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1634.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

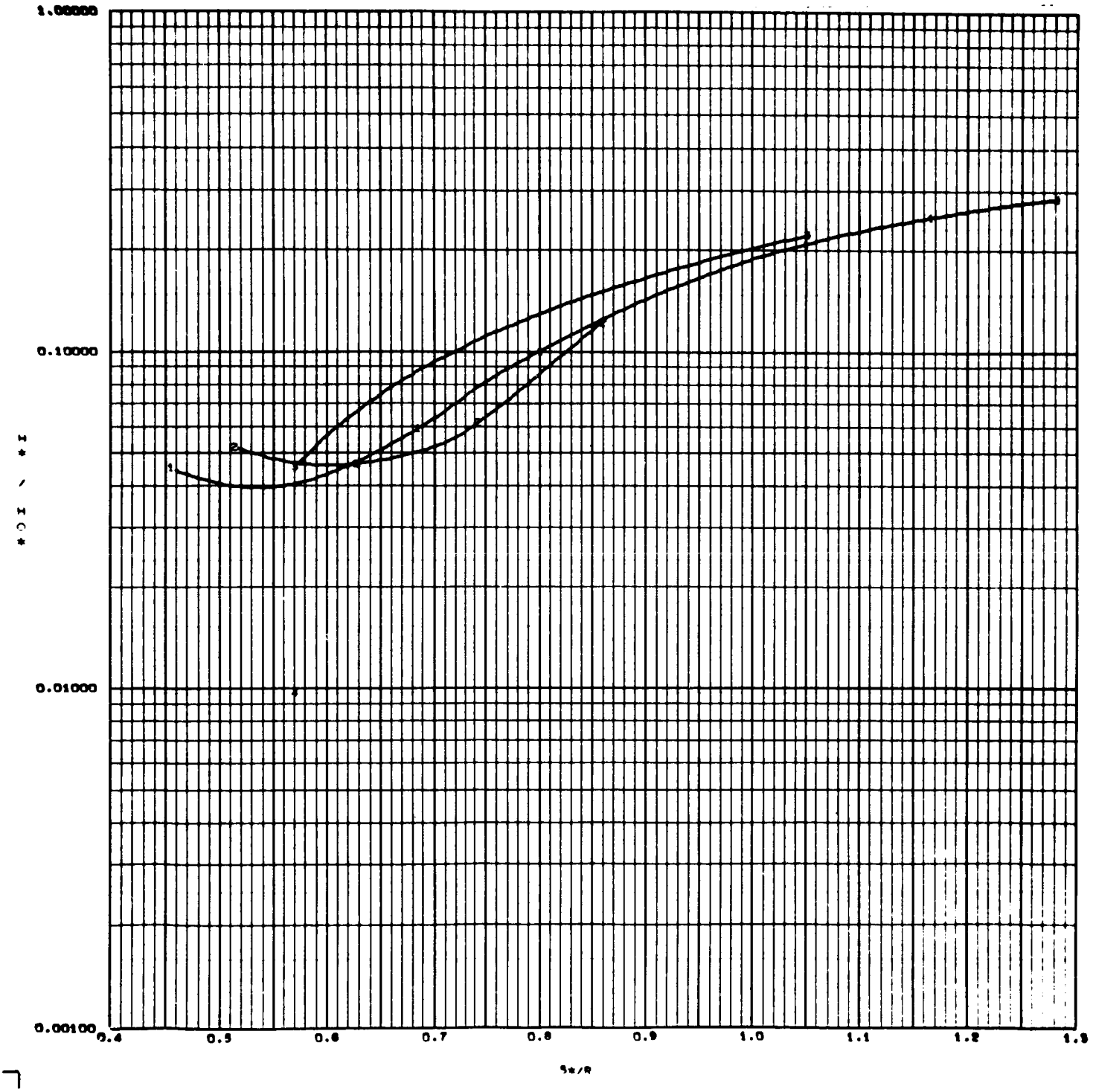
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 11
TOTAL PRESSURE 216.7 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1634.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



~~CONFIDENTIAL~~

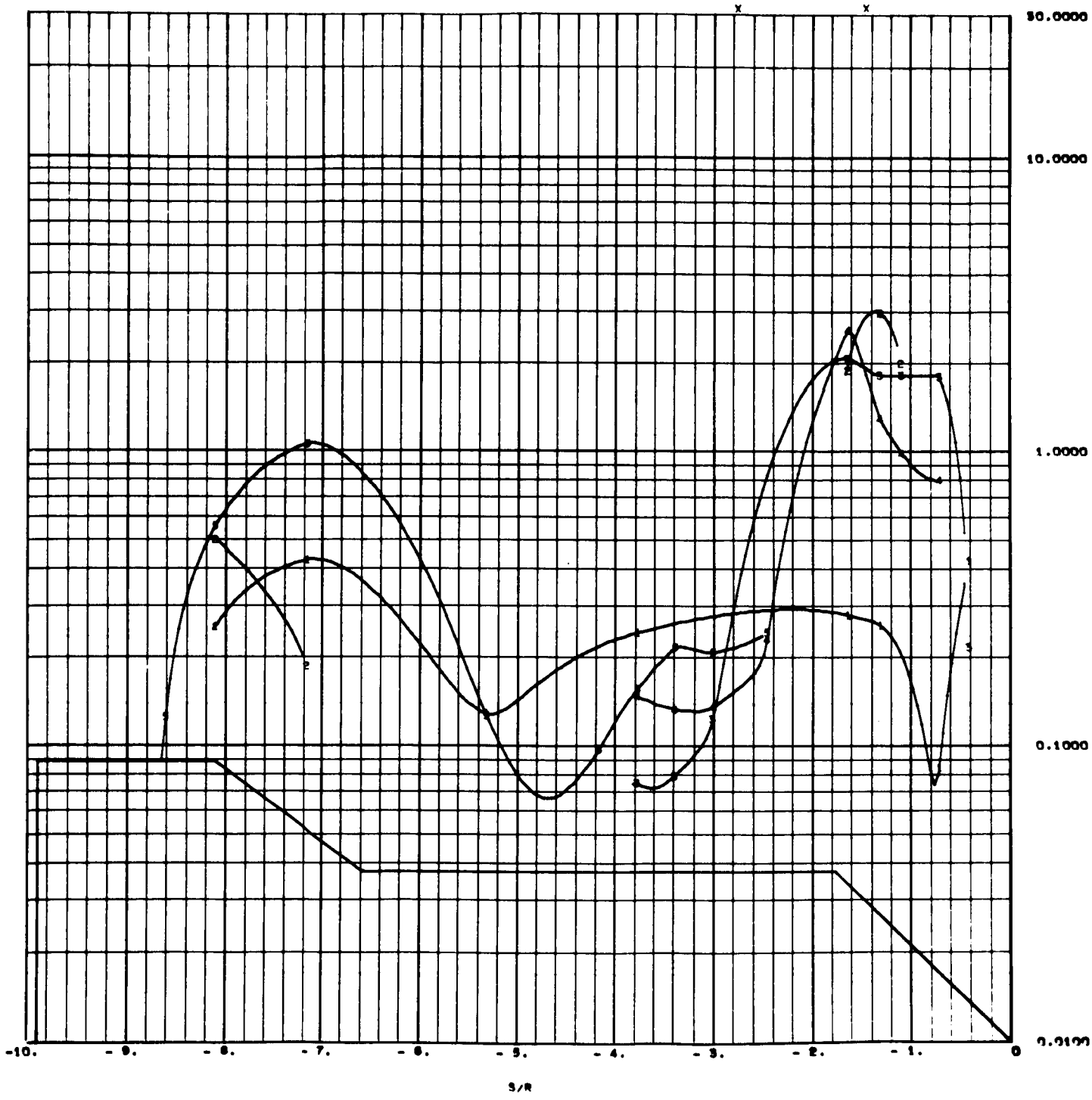
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 12
TOTAL PRESSURE 211.0 PSIA
REYNOLDS NUMBER PER INCH 0.0280 X 10^6
H_o* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1637.20 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



~~CONFIDENTIAL~~

[redacted]

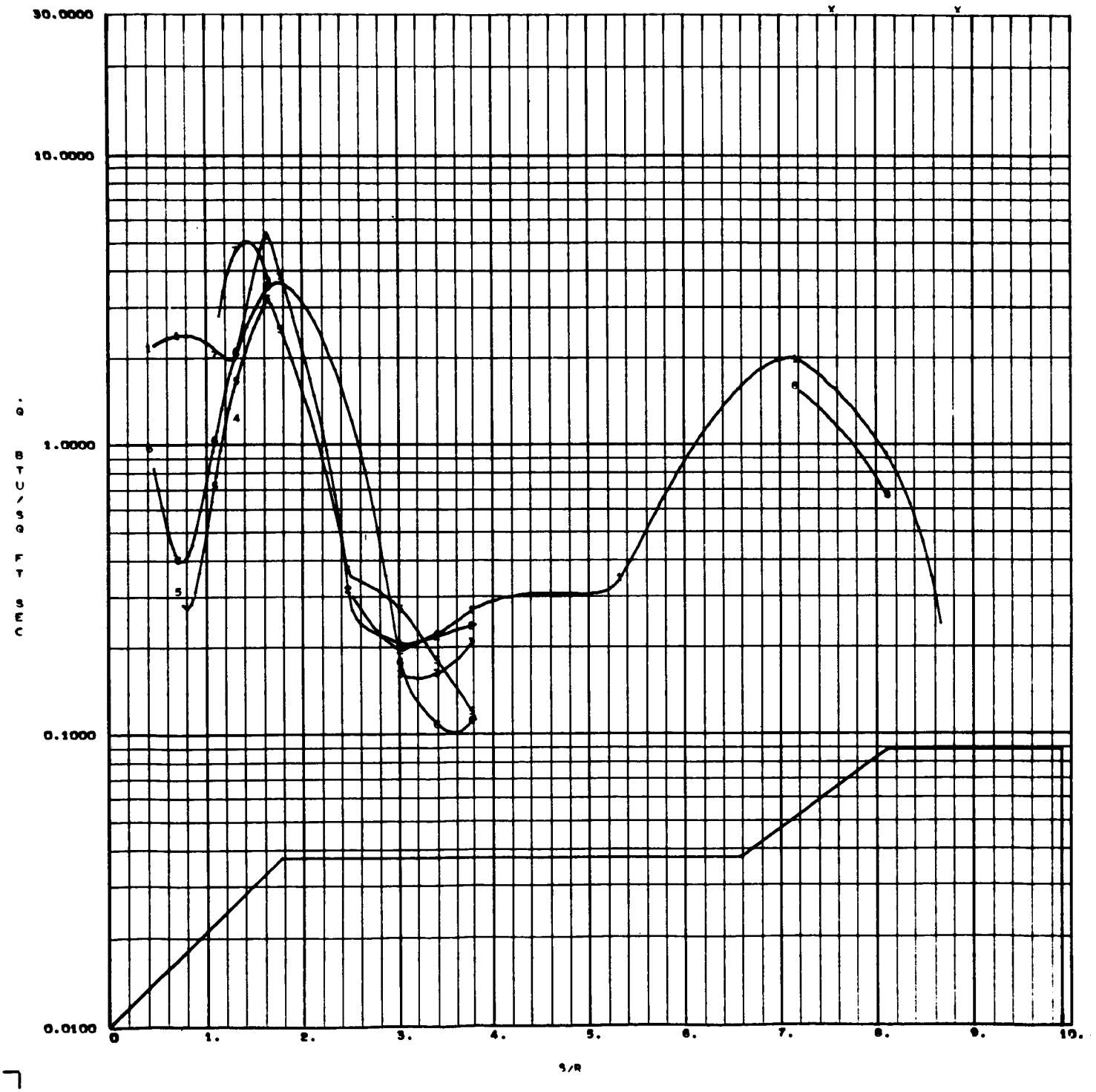
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 12
TOTAL PRESSURE 211.0 PSIA
REYNOLDS NUMBER PER INCH 0.0280 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1637.20 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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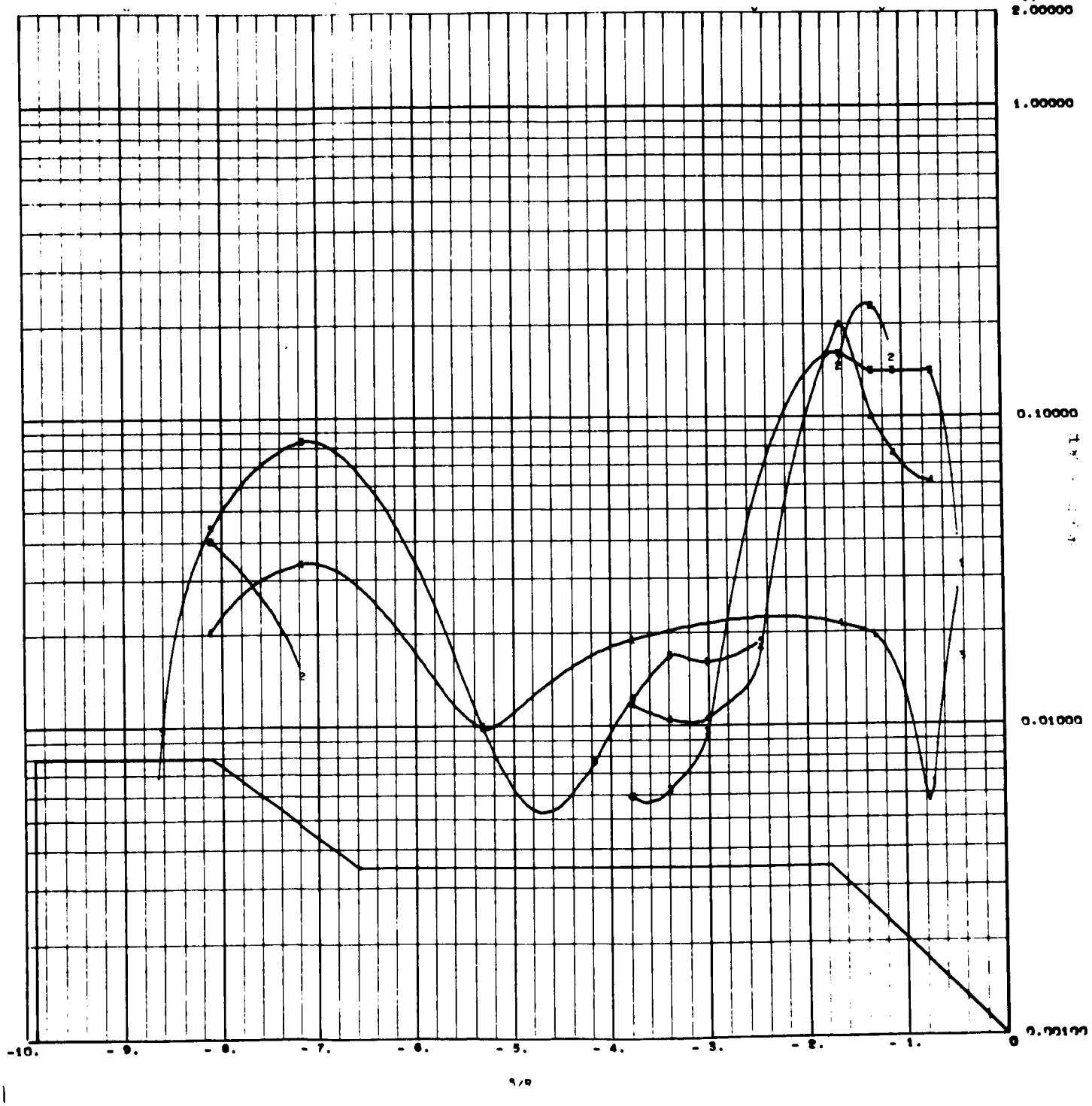
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 12
TOTAL PRESSURE 211.0 PSIA
REYNOLDS NUMBER PER INCH 0.0280 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1637.20 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

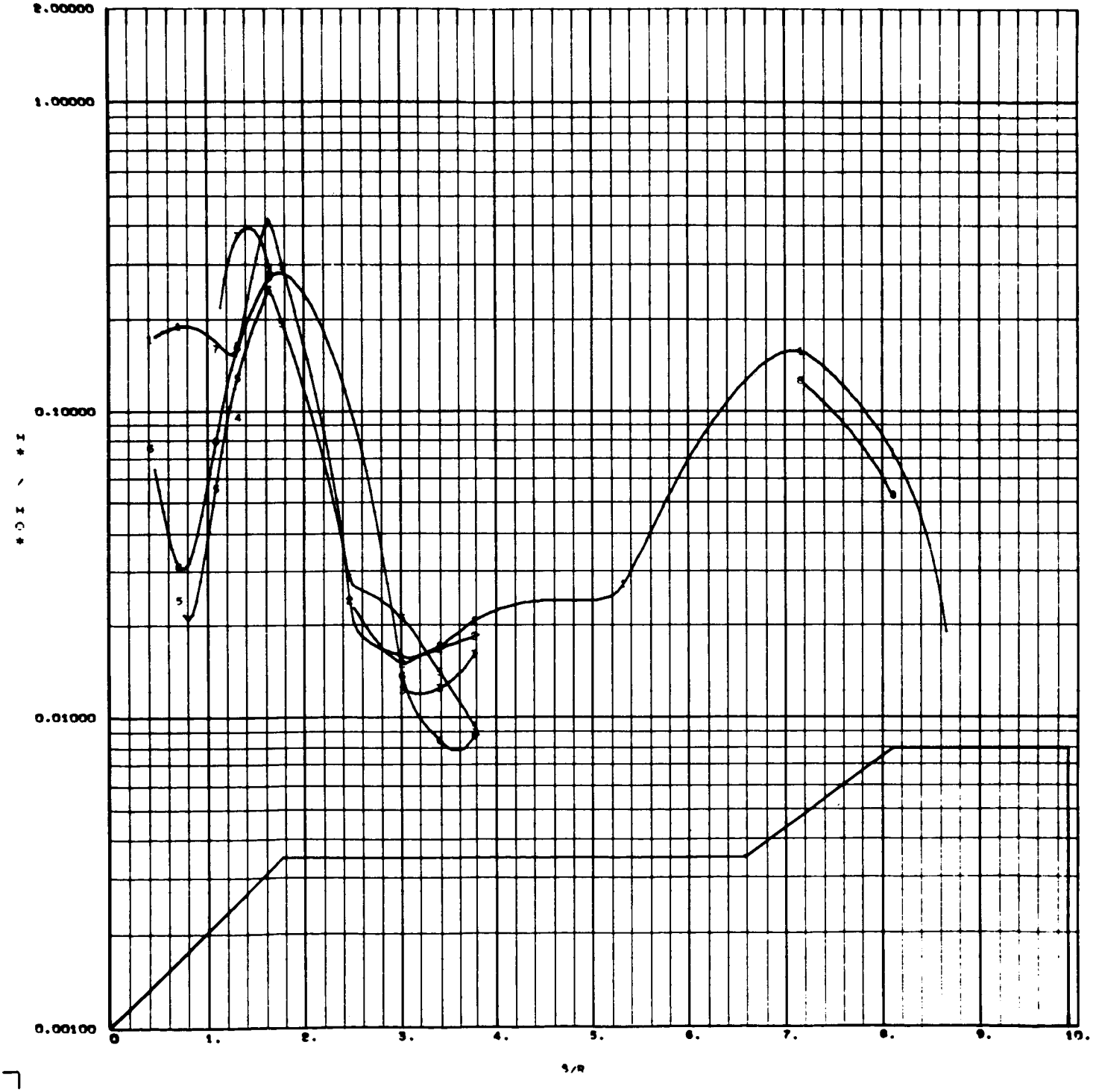
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 12
TOTAL PRESSURE 211.0 PSIA
REYNOLDS NUMBER PER INCH 0.0280 X 10^6
H_0^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1637.20 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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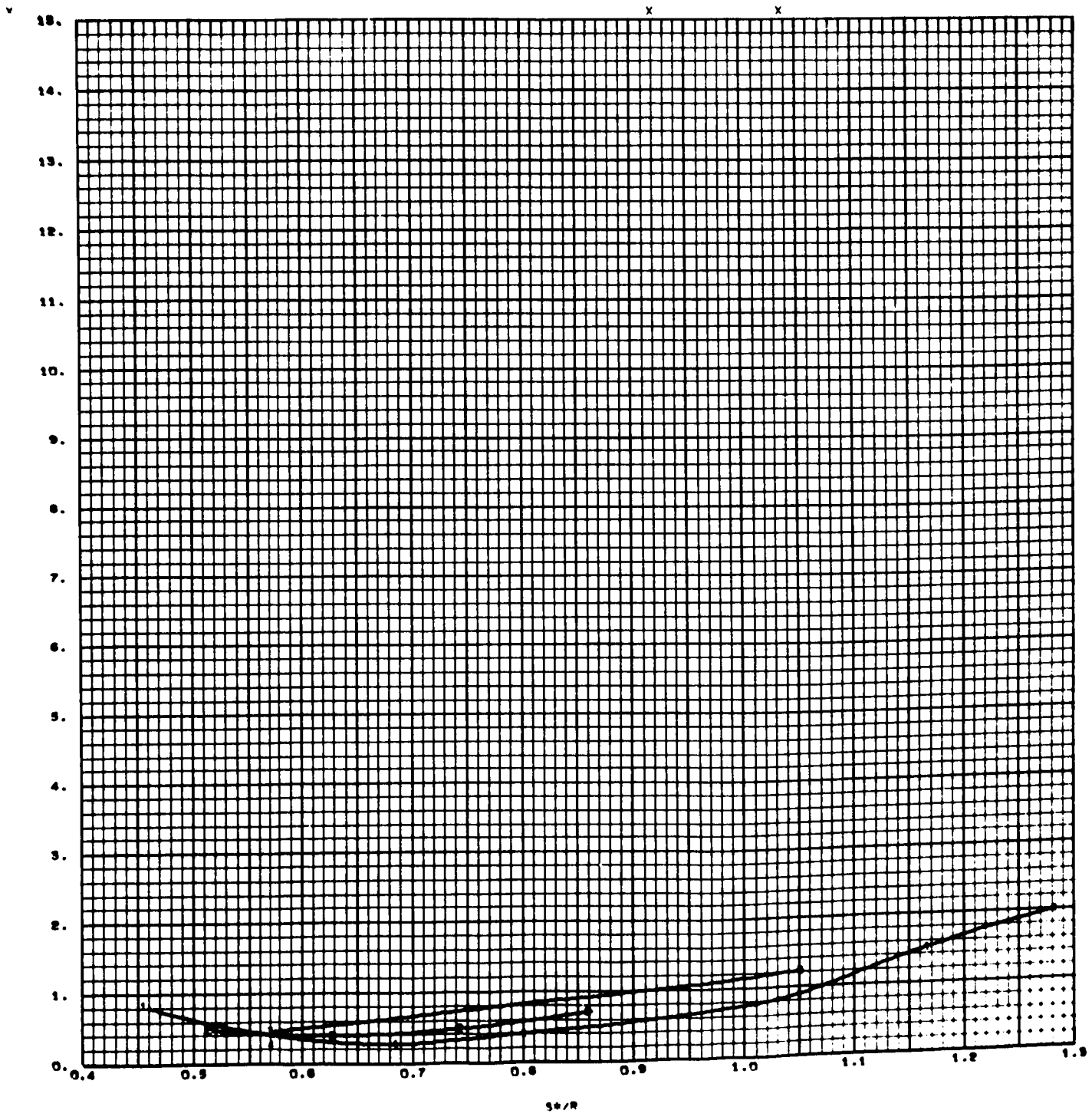
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 12
TOTAL PRESSURE 211.0 PSIA
REYNOLDS NUMBER PER INCH 0.0280 x 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1637.20 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

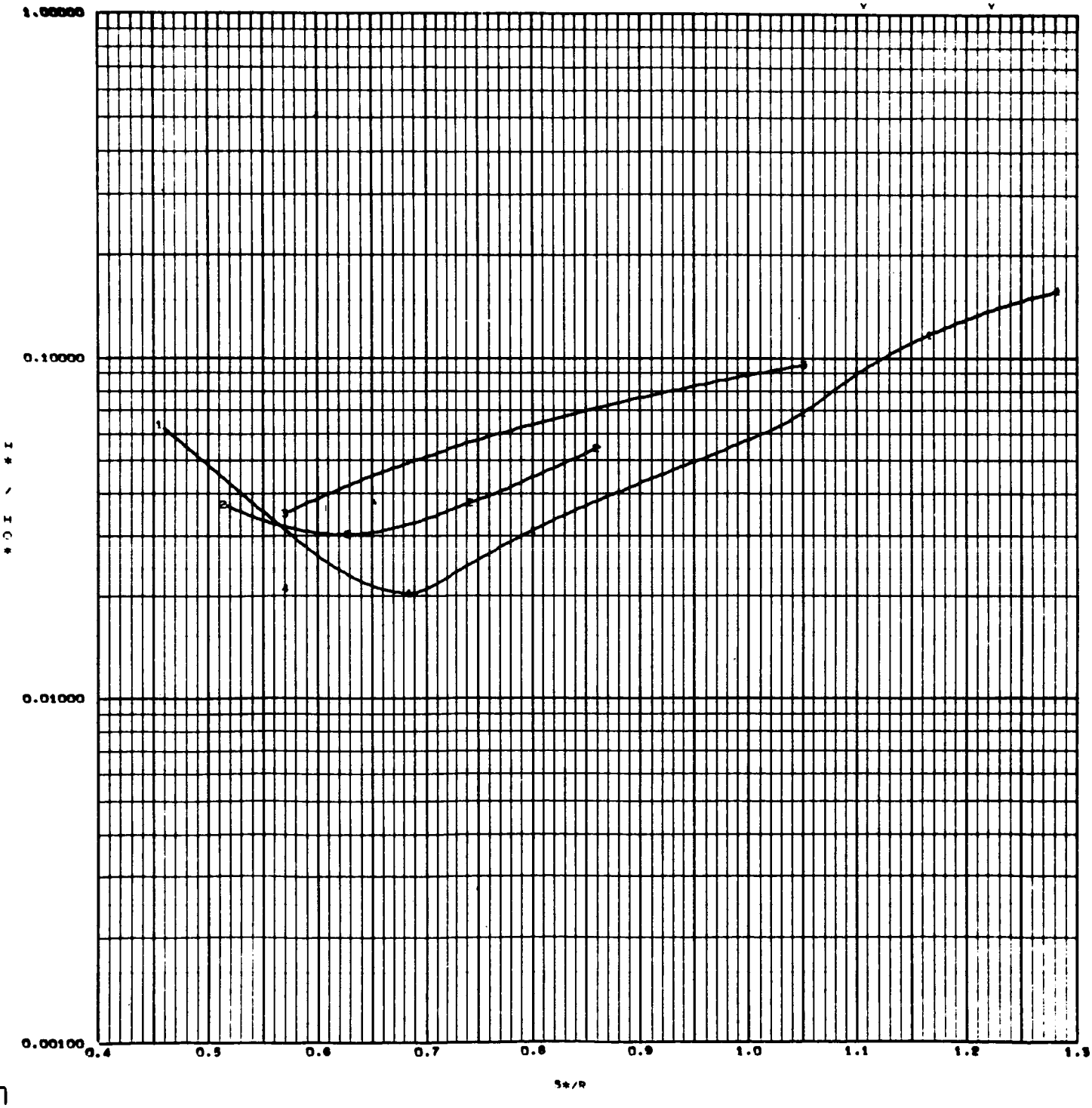
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 12
TOTAL PRESSURE 211.0 PSIA
REYNOLDS NUMBER PER INCH 0.0280 x 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1637.20 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

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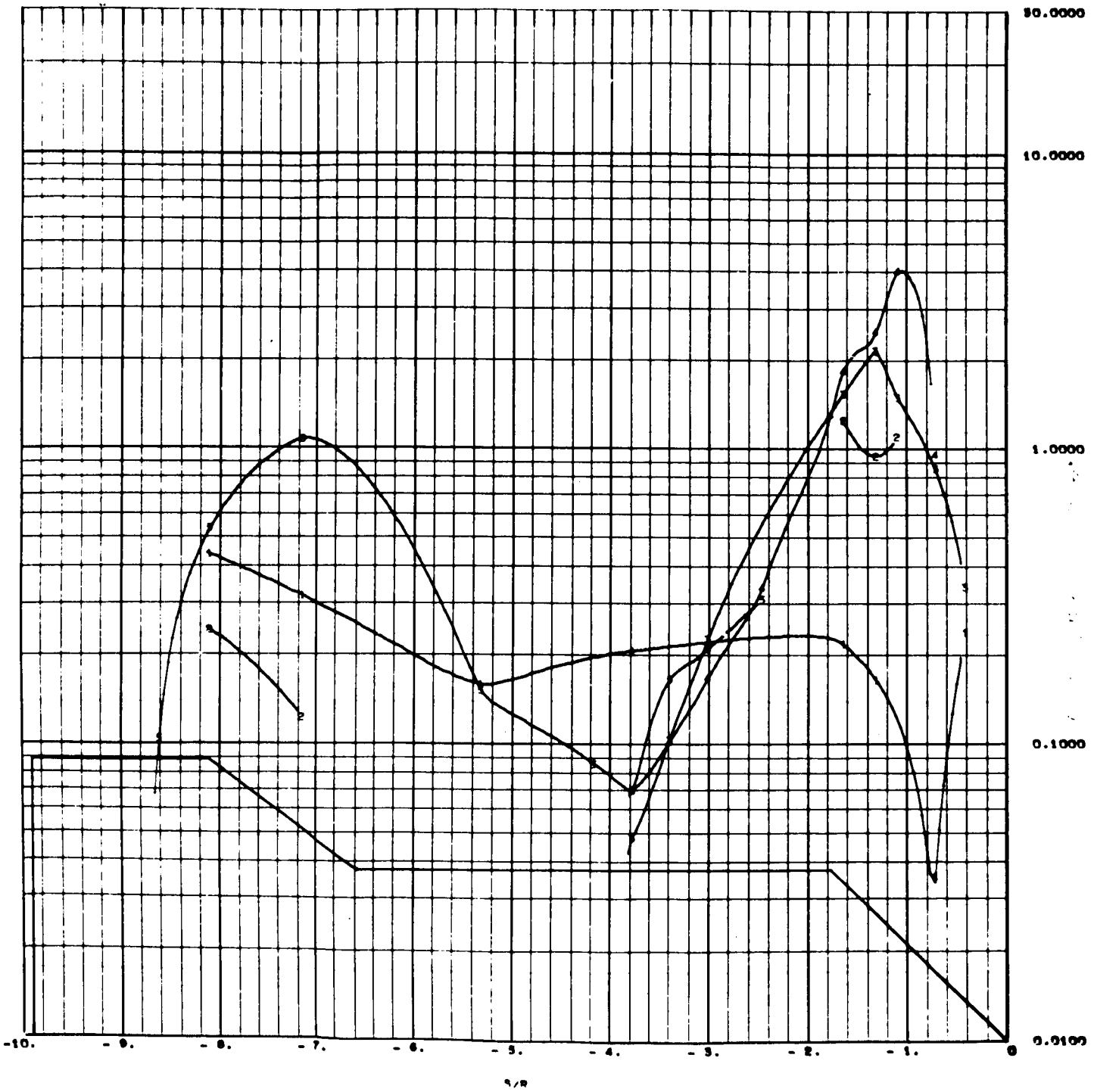
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 13
TOTAL PRESSURE 213.2 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.50 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

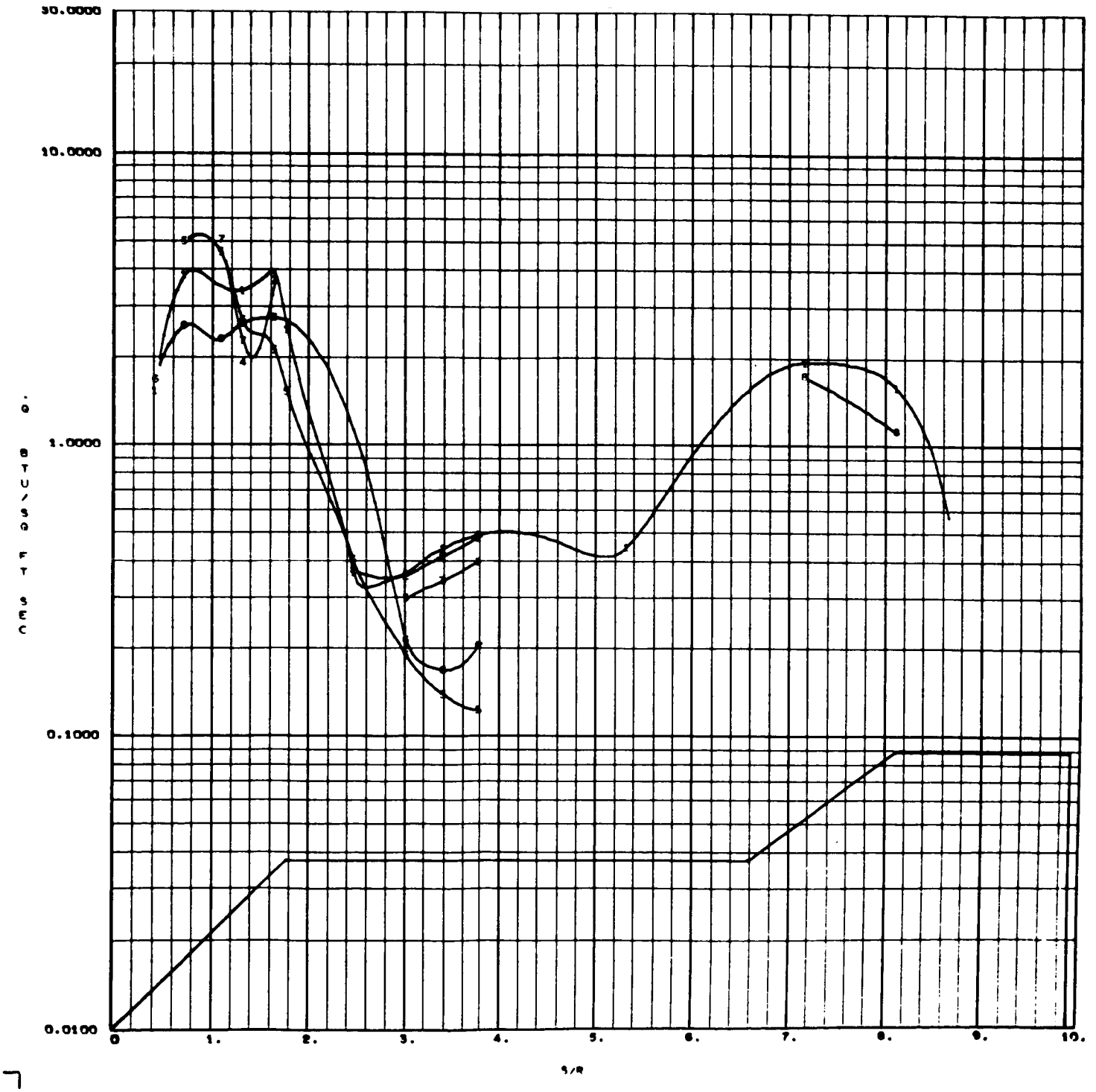
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 13
TOTAL PRESSURE 213.2 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.50 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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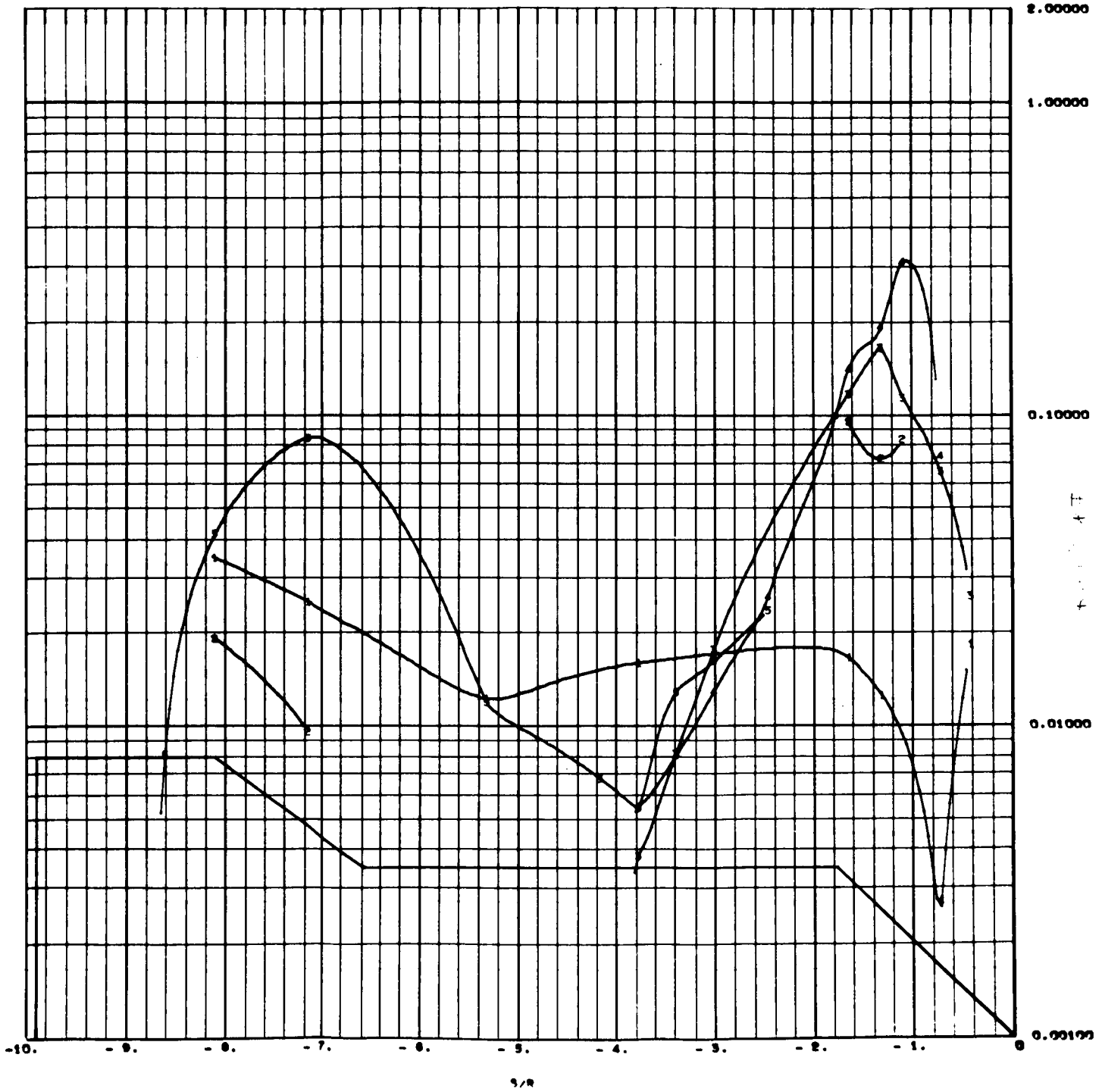
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 13
TOTAL PRESSURE 213.2 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.50 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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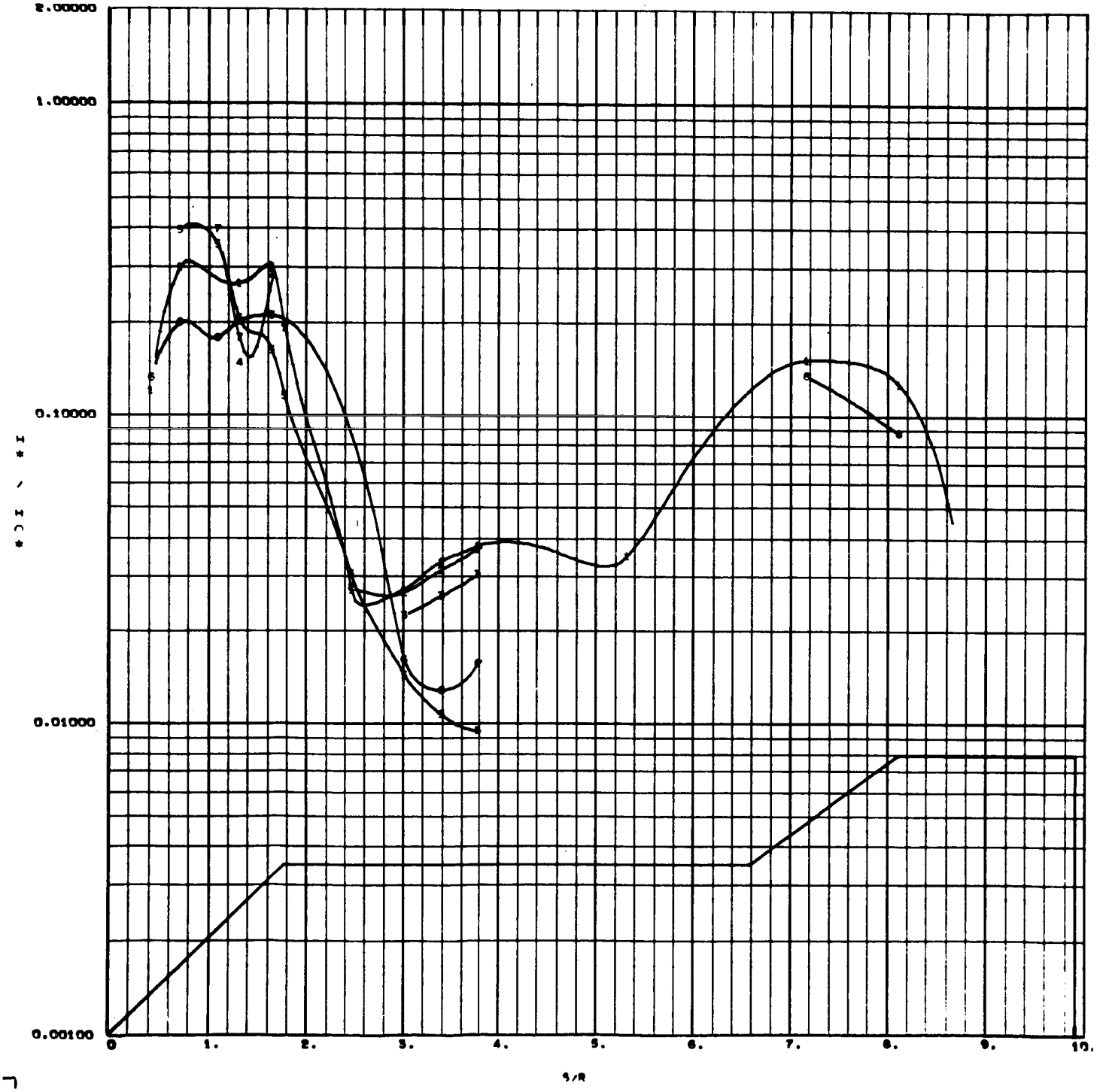
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 13
TOTAL PRESSURE 213.2 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1642.50 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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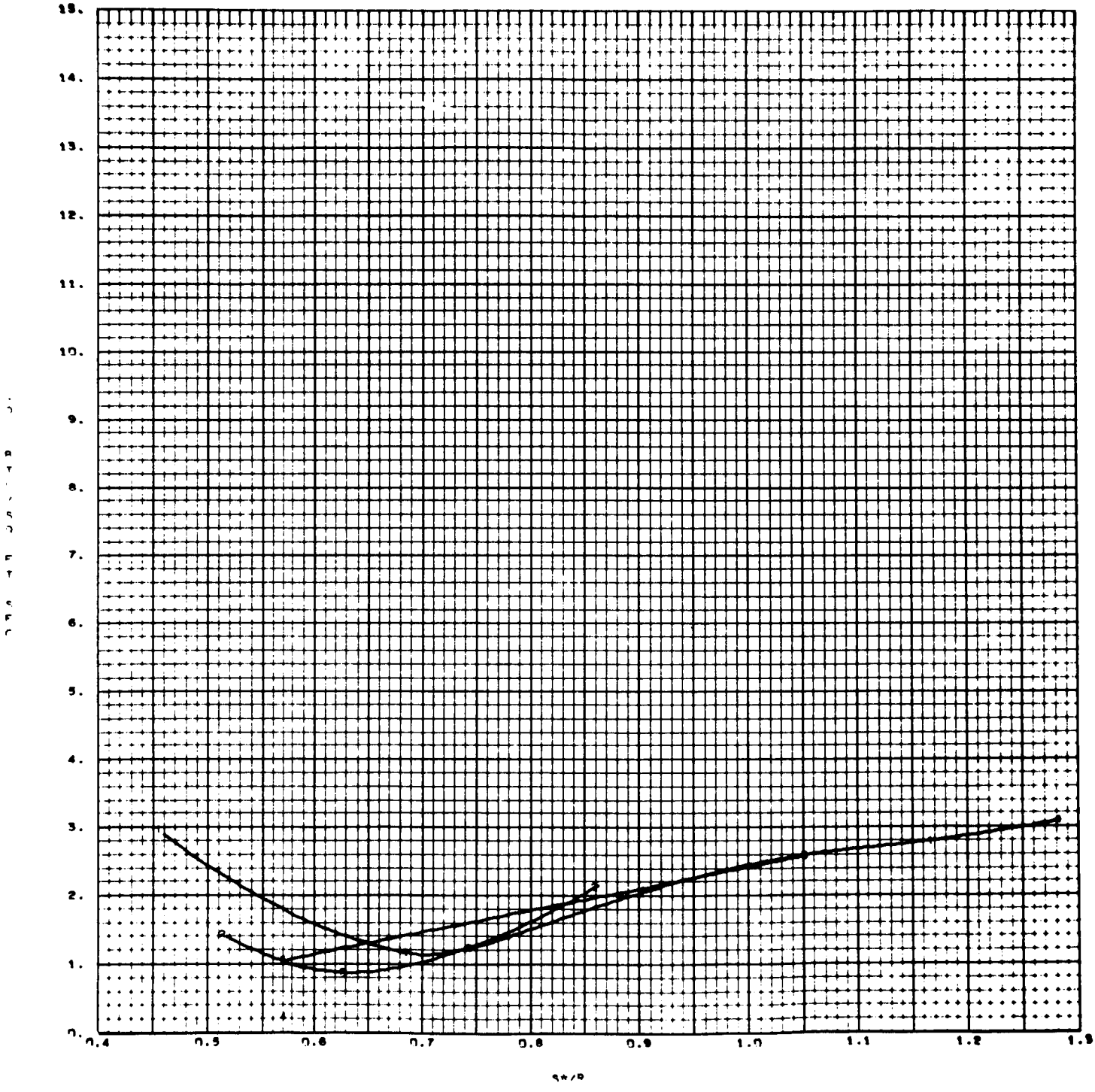
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 13
TOTAL PRESSURE 213.2 PSIA
REYNOLDS NUMBER PER INCH 0.0281 x 10^6
H_c^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1642.50 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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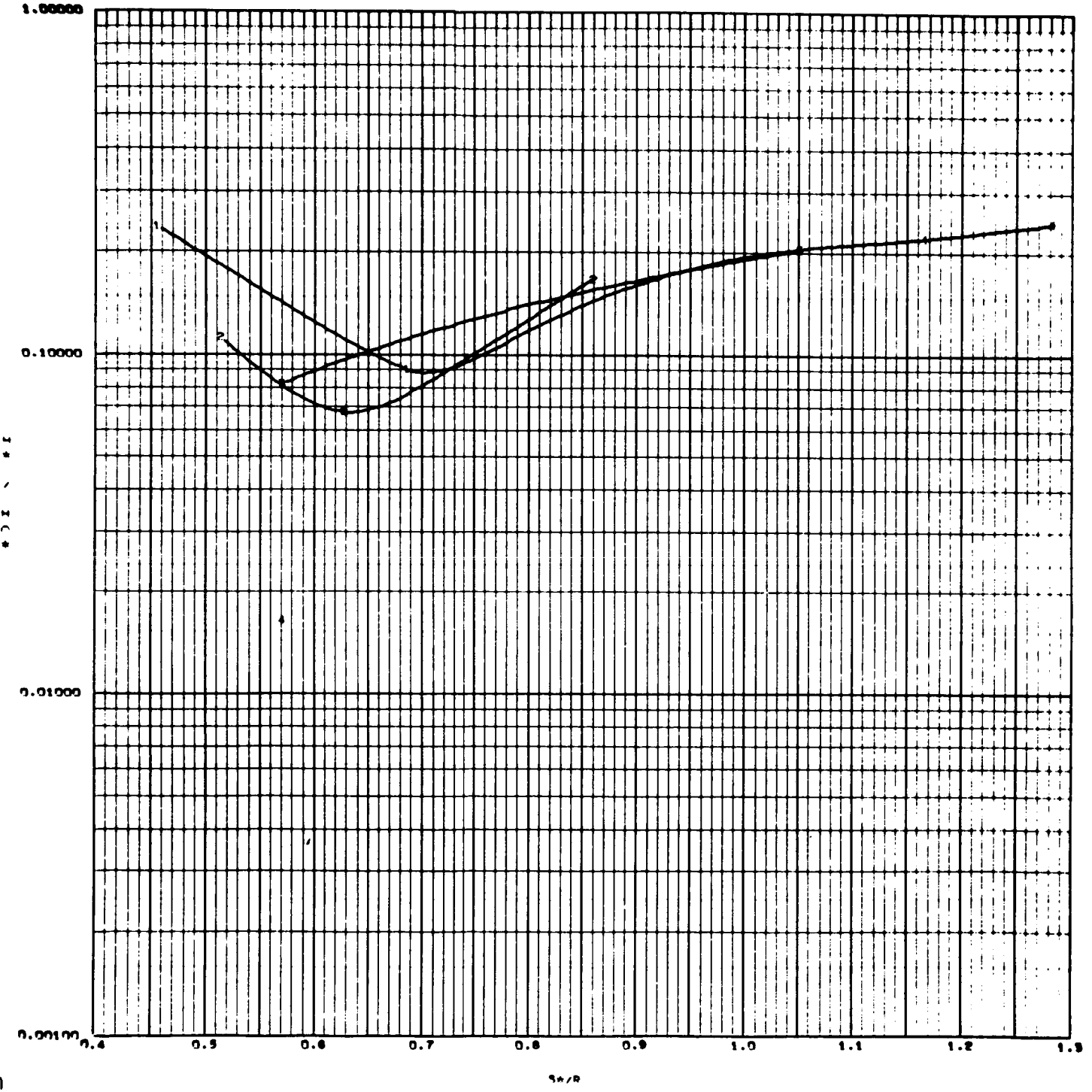
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.04
GROUP NO. 13
TOTAL PRESSURE 213.2 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1642.50 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

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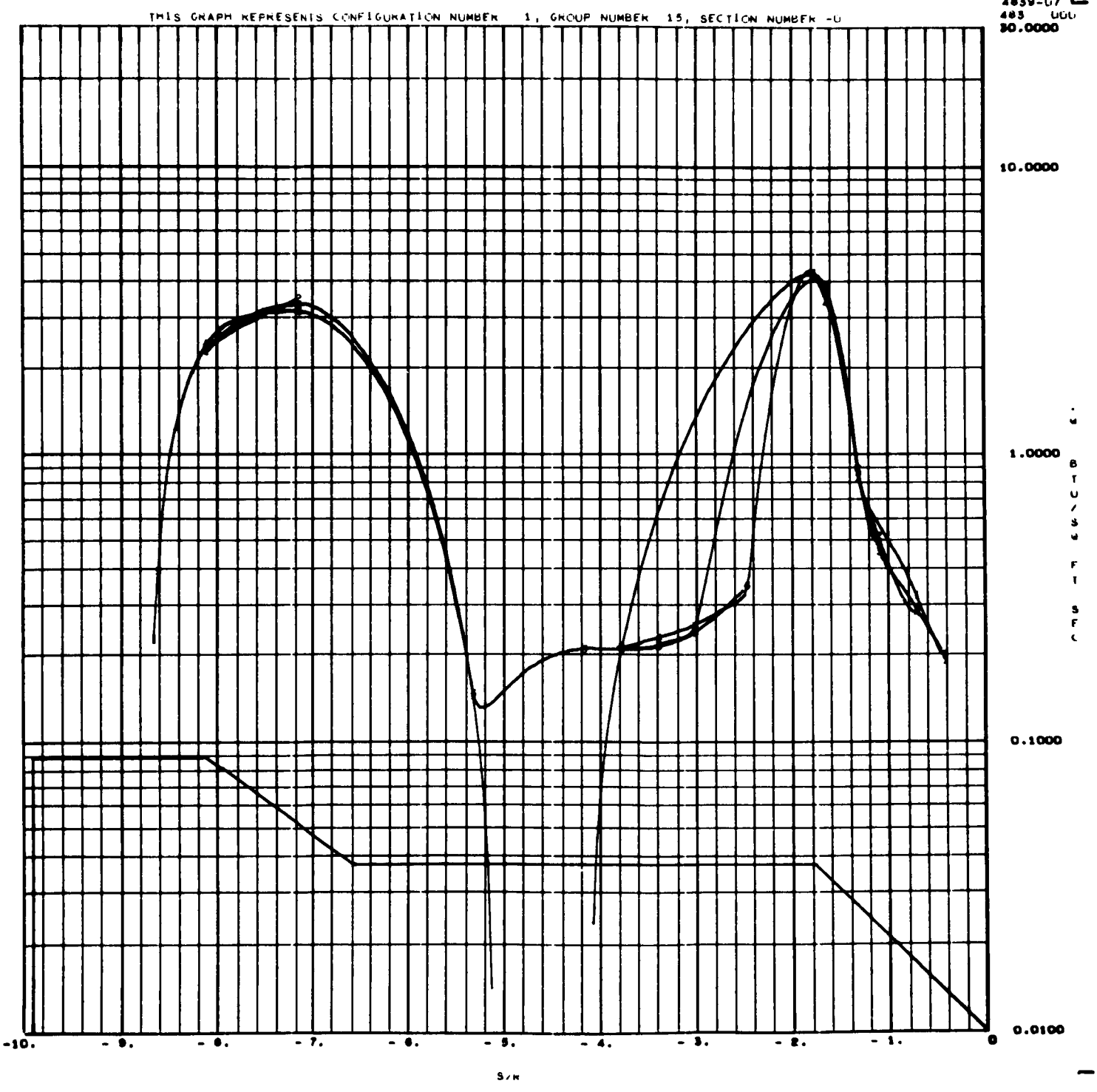
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.10
GROUP NO. 15
TOTAL PRESSURE 474.3 PSIA
REYNOLDS NUMBER PER INCH 0.0563 X 10^6
H_o* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1730.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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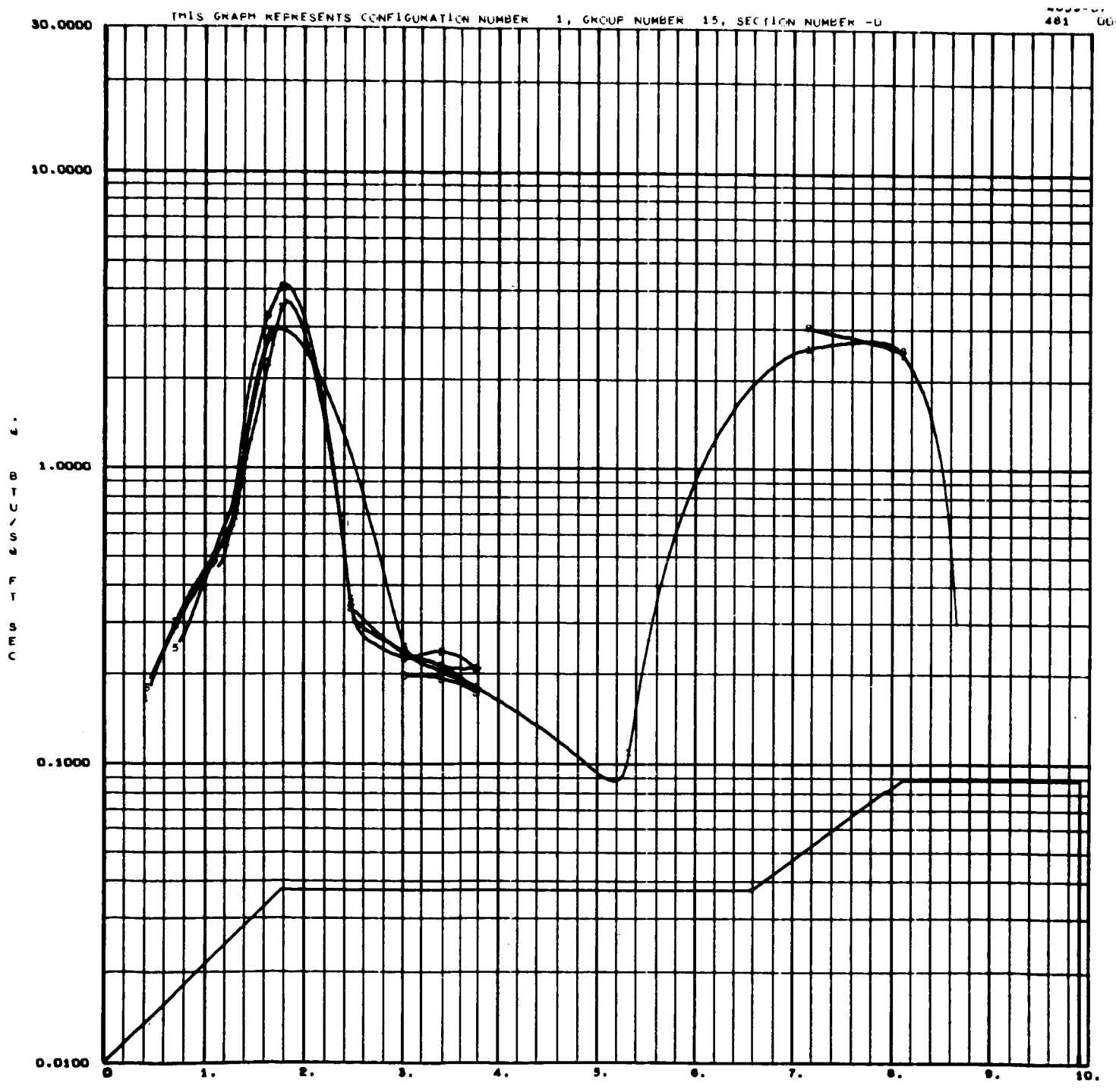
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.10
GROUP NO. 15
TOTAL PRESSURE 474.3 PSIA
REYNOLDS NUMBER PER INCH 0.0563 x 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1730.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.10
GROUP NO. 15
TOTAL PRESSURE 474.3 PSIA
REYNOLDS NUMBER PER INCH 0.0563 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1730.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 15, SECTION NUMBER -0

4839-07
487 000

2.00000
1.00000
0.10000
0.01000
0.00100

H^* / H_o^*

-10. -9. -8. -7. -6. -5. -4. -3. -2. -1. 0

S/R

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[redacted]

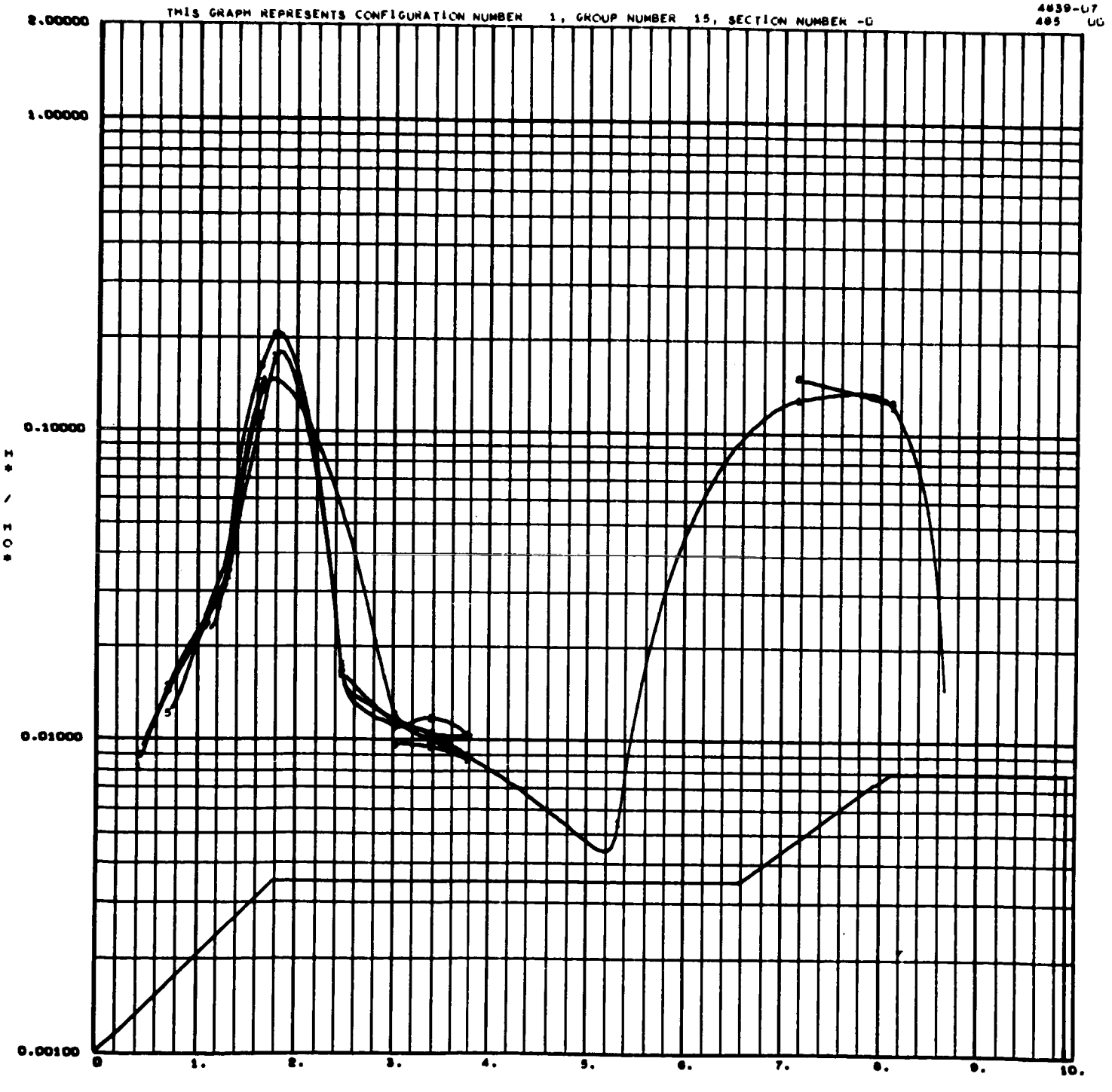
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.10
GROUP NO. 15
TOTAL PRESSURE 474.3 PSIA
REYNOLDS NUMBER PER INCH 0.0563 x 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1730.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

HEAT TRANSFER TEST

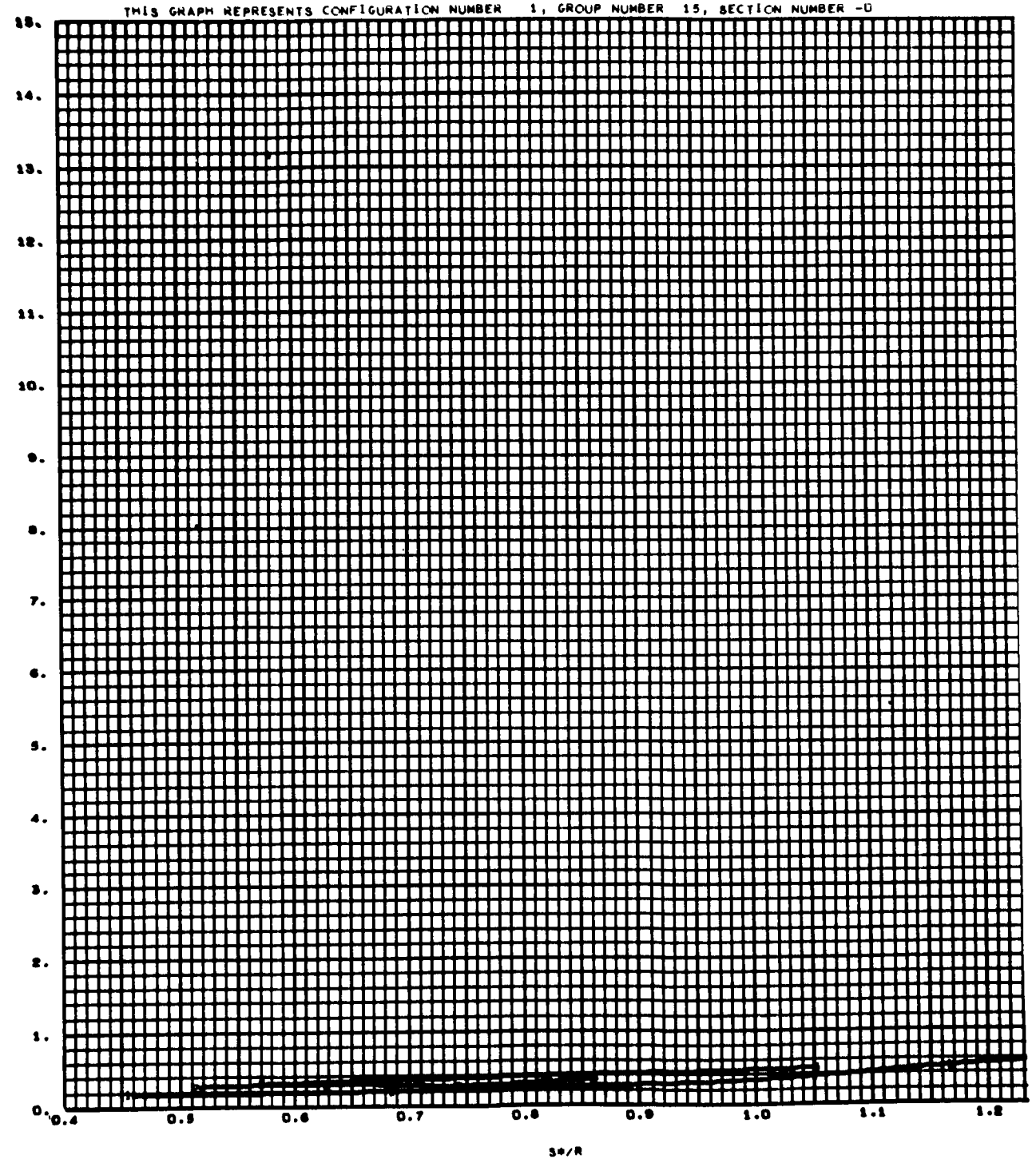
APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.10
GROUP NO. 15
TOTAL PRESSURE 474.3 PSIA
REYNOLDS NUMBER PER INCH 0.0563 X 10^6
H_C^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1730.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1 WINDWARD STRAKE DATA
2.0	2
3.0	3
4.0	4 LEEWARD STRAKE DATA

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 15, SECTION NUMBER -0



[redacted]

[redacted]

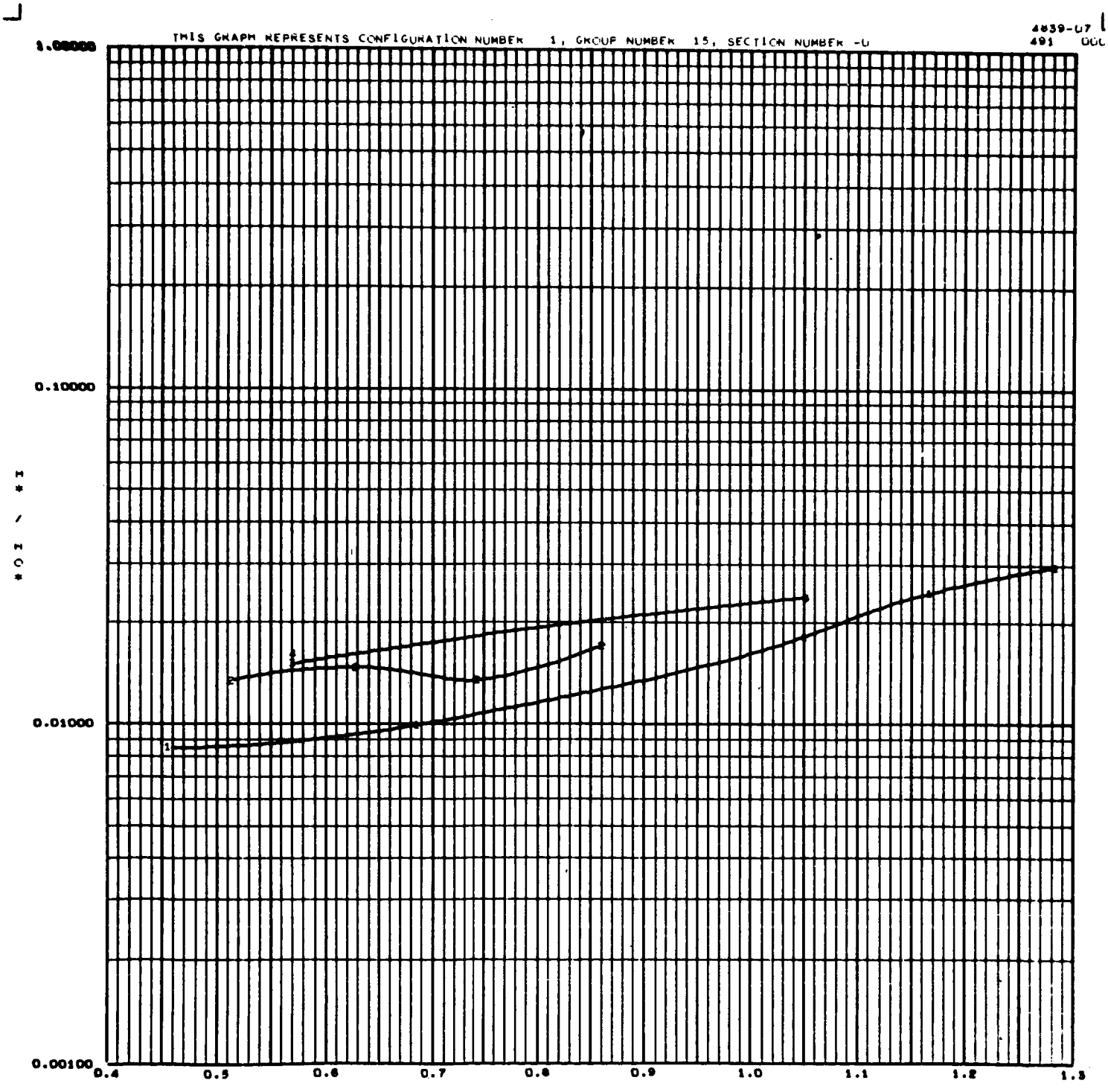
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.10
GROUP NO. 15
TOTAL PRESSURE 474.3 PSIA
REYNOLDS NUMBER PER INCH 0.0563 x 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1730.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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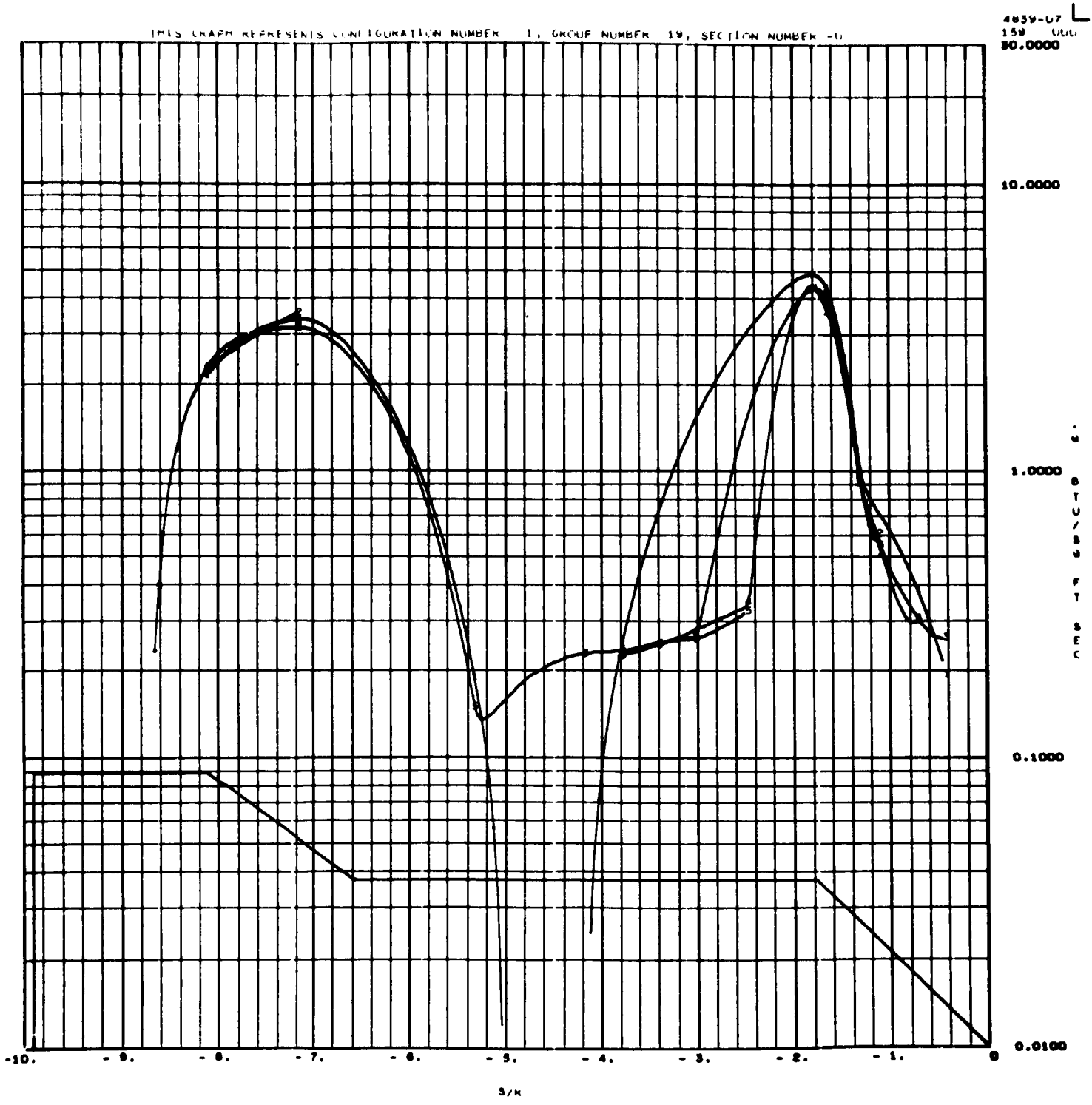
HEAT TRANSFER TEST
APOLLO
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 19
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
μ_c^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

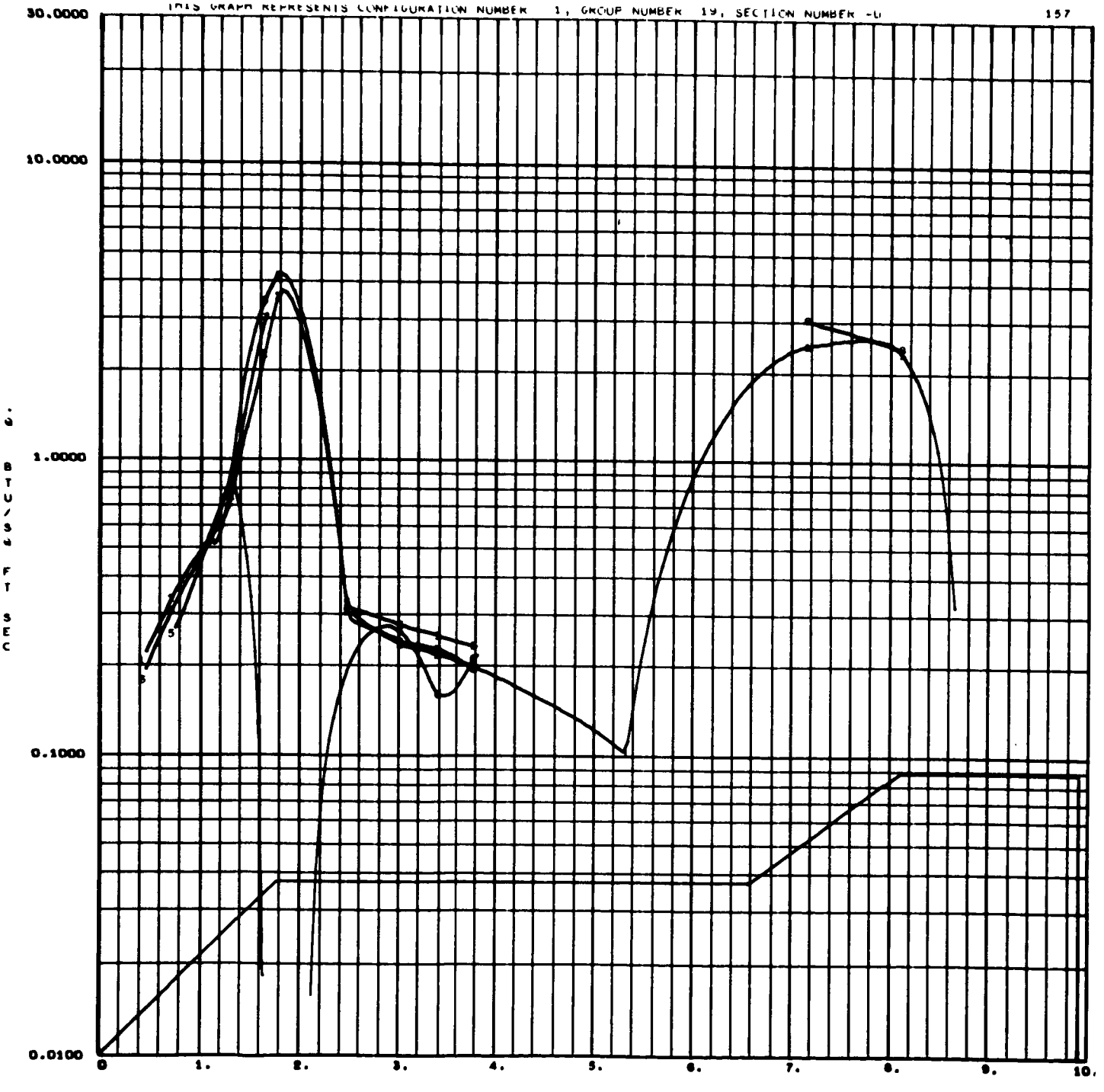
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 19
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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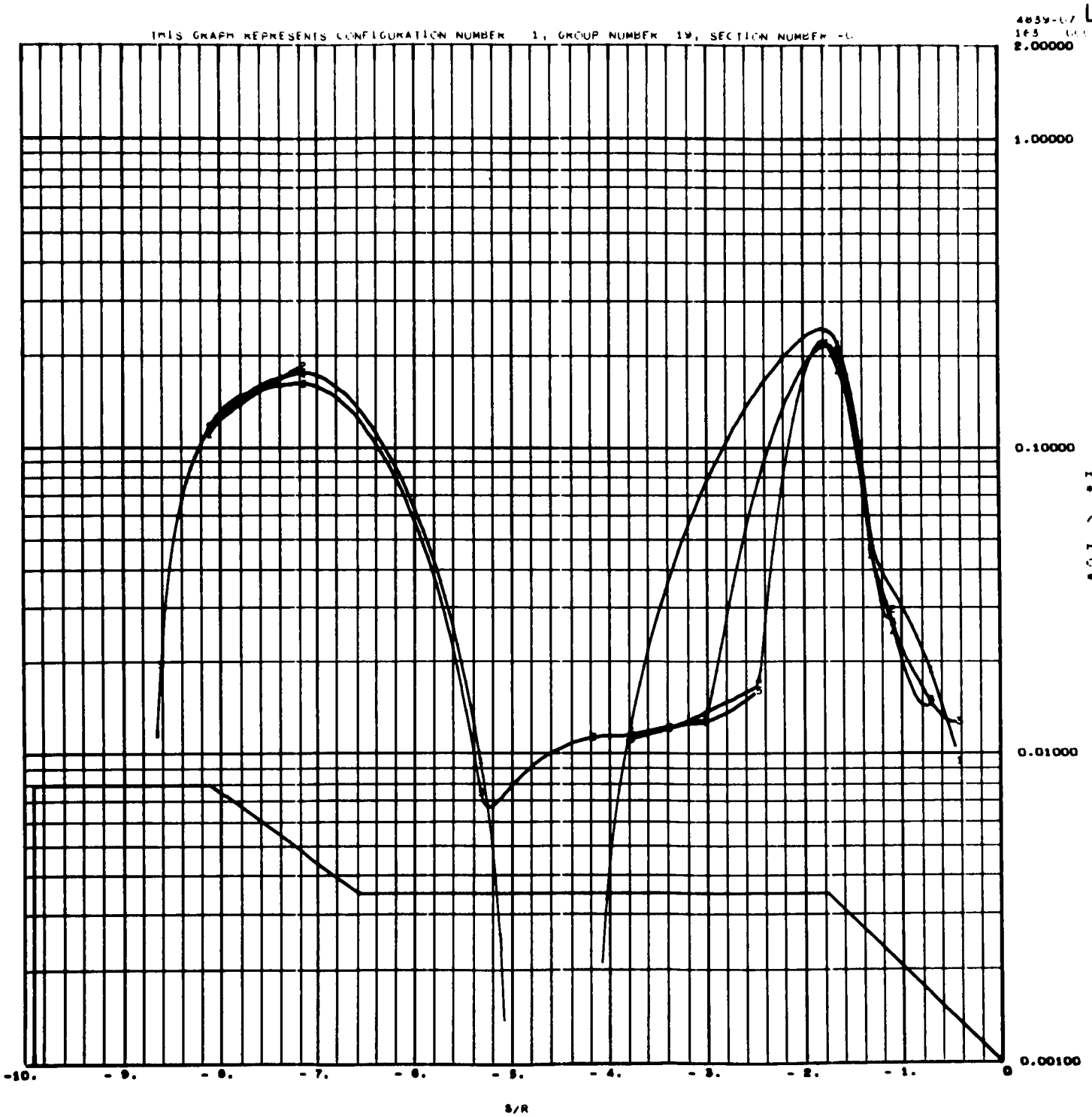
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 19
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0547 x 10^6
M_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

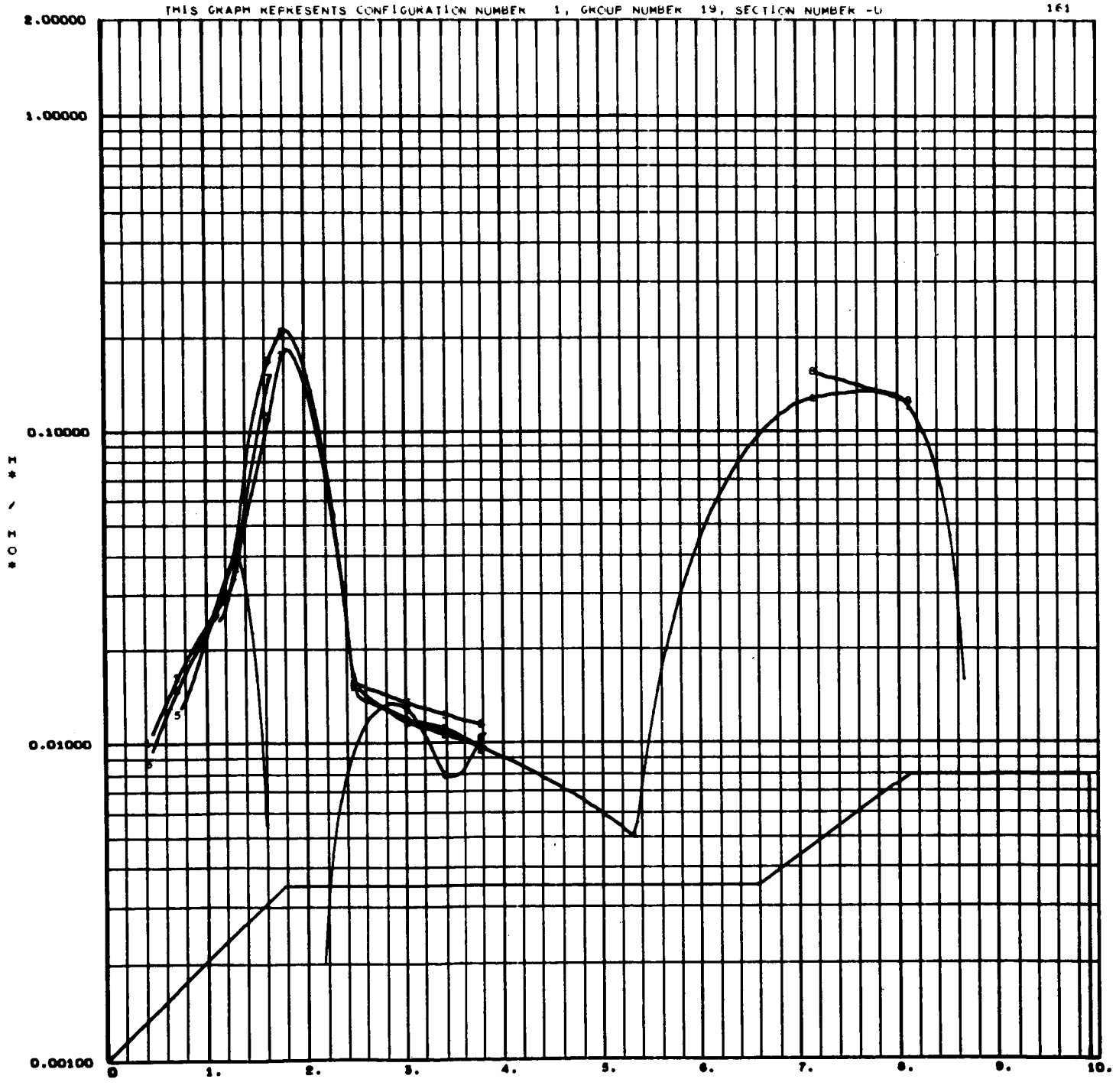
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 19
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

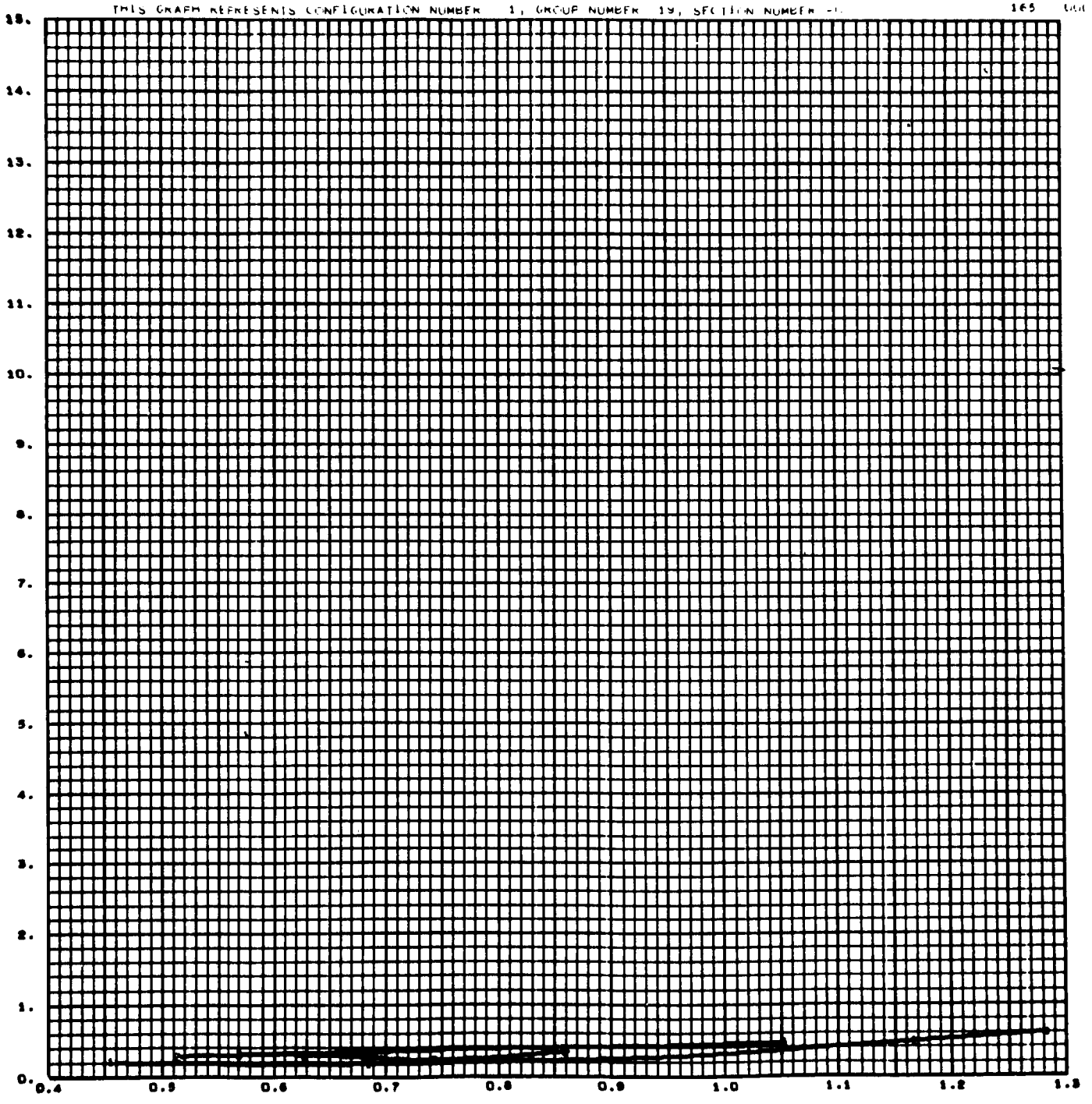
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 19
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
μ_0 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4639-07
165 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 19, SECTION NUMBER -1-



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[redacted]

HEAT TRANSFER TEST

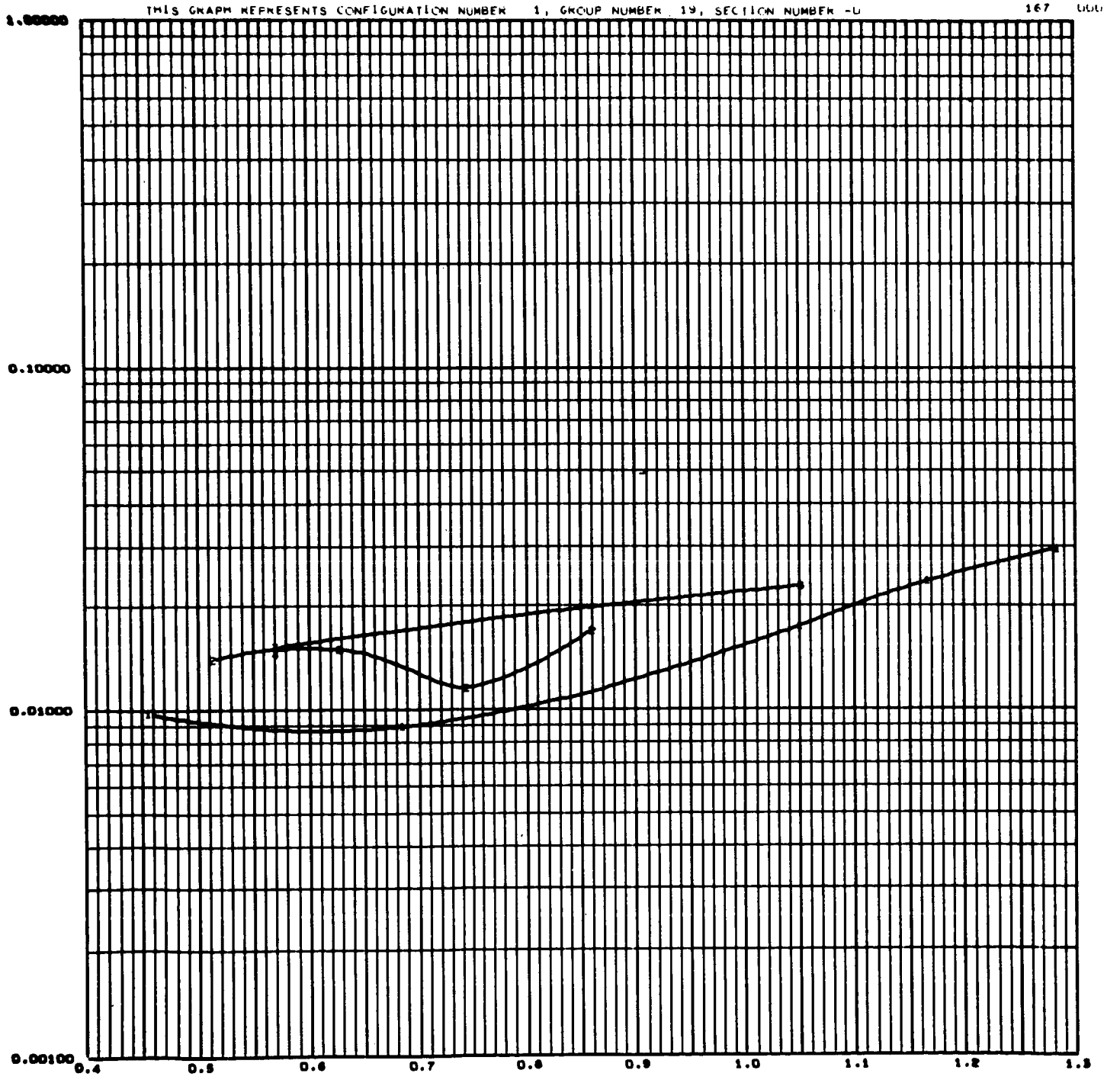
APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 19
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_O^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1729.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-07
167 000



[redacted]

[redacted]

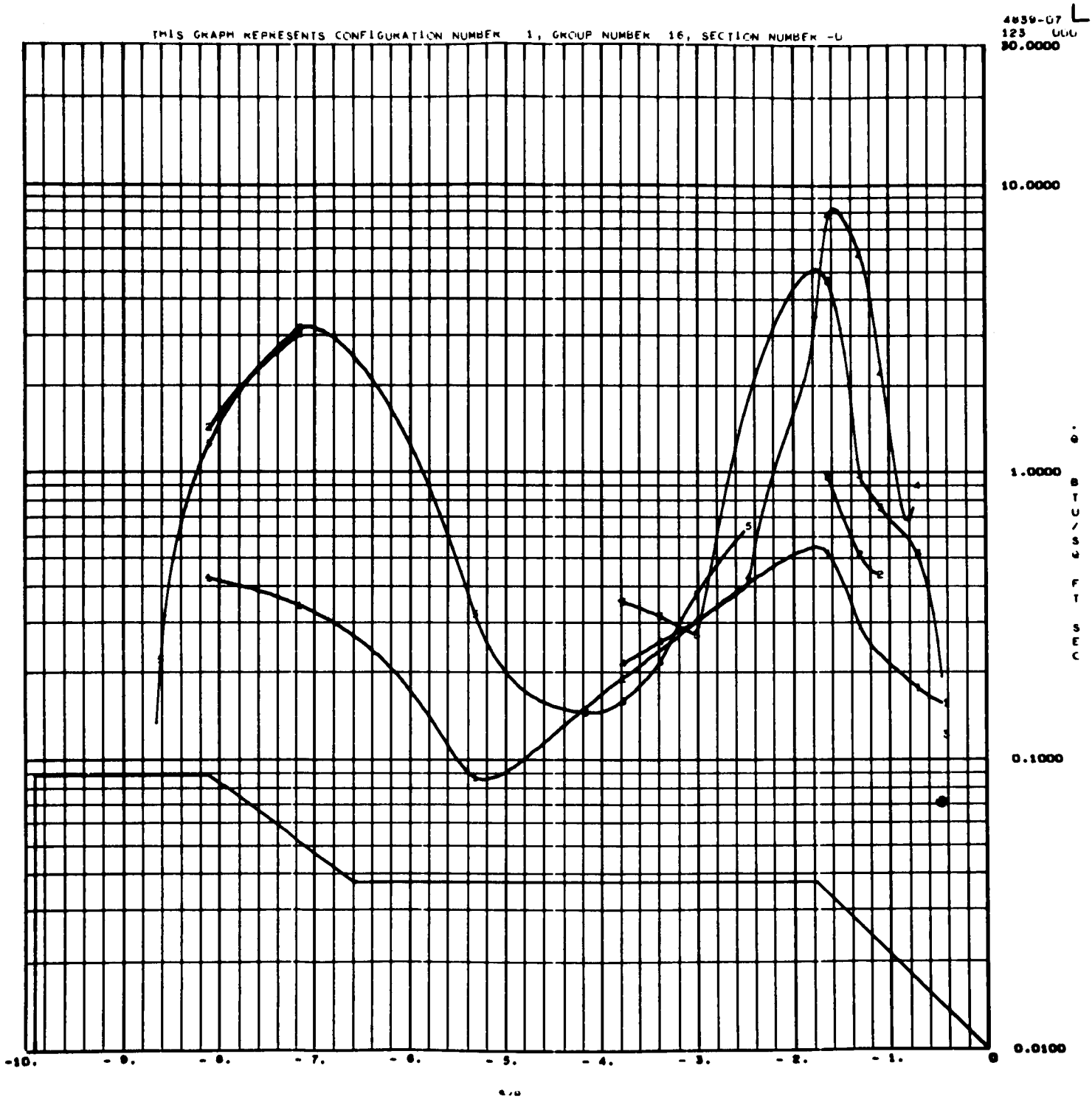
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 16
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

CONFIDENTIAL

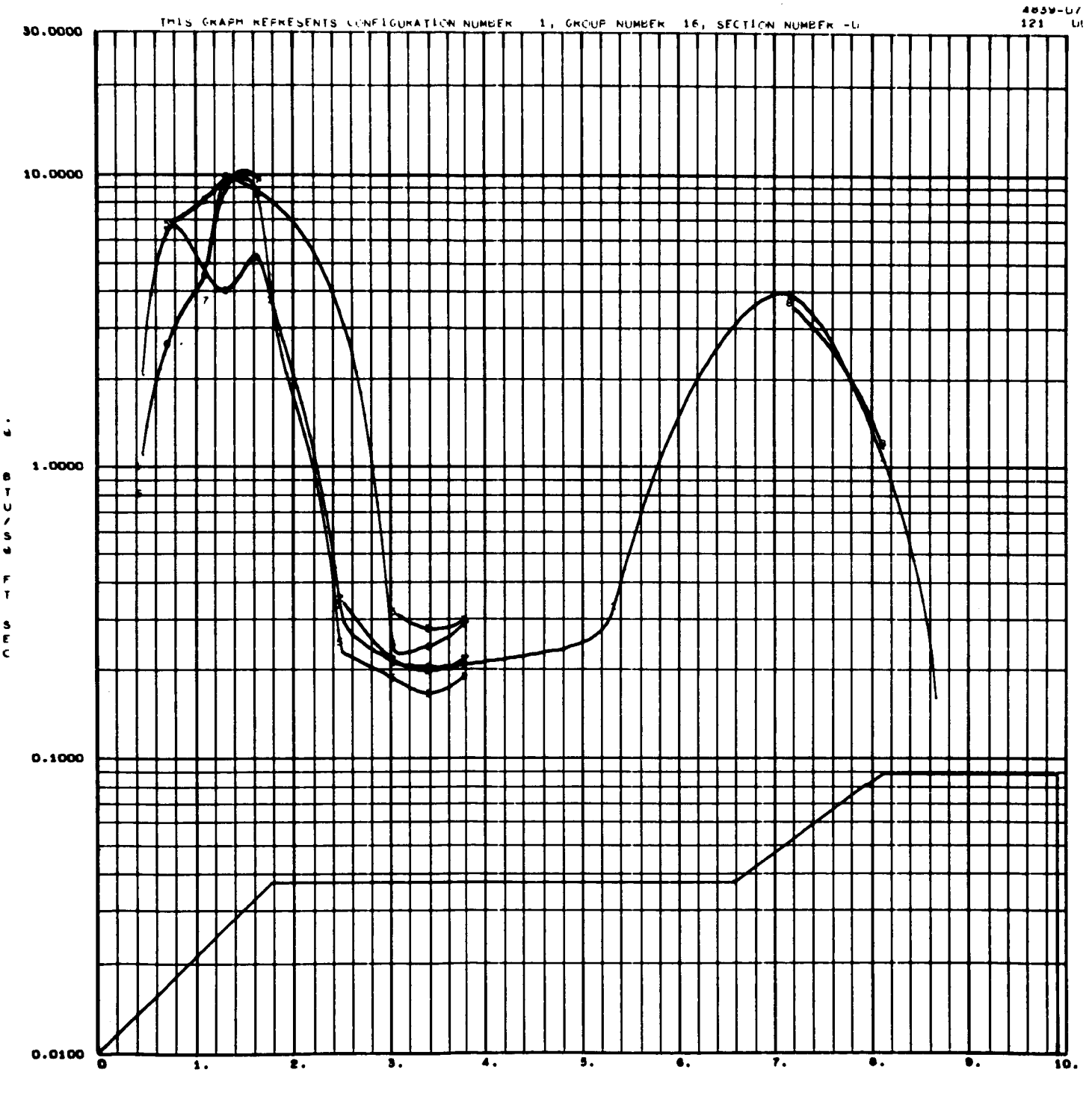
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 16
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
μ_o 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



CONFIDENTIAL

[redacted]

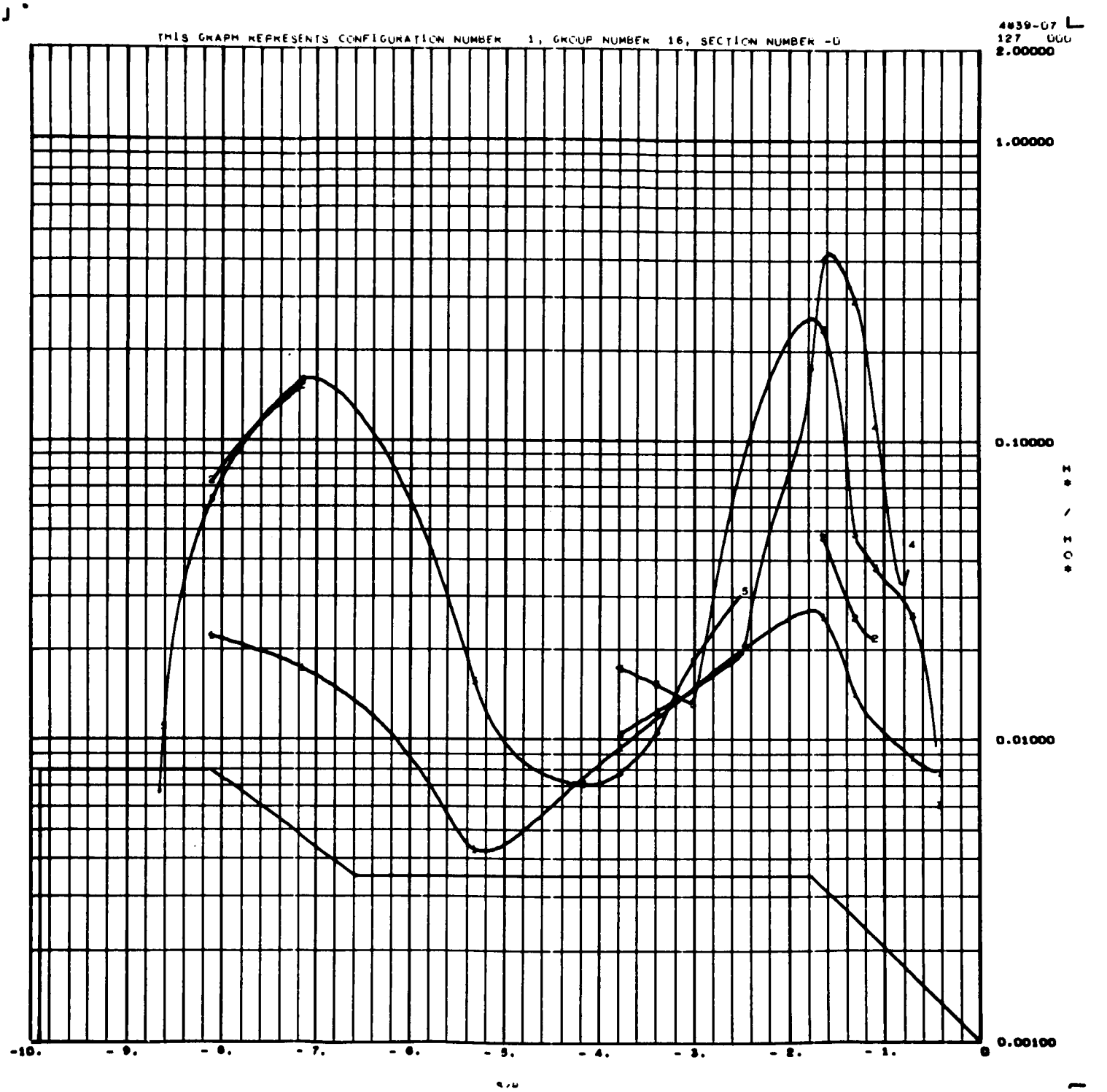
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 16
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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~~CONFIDENTIAL~~

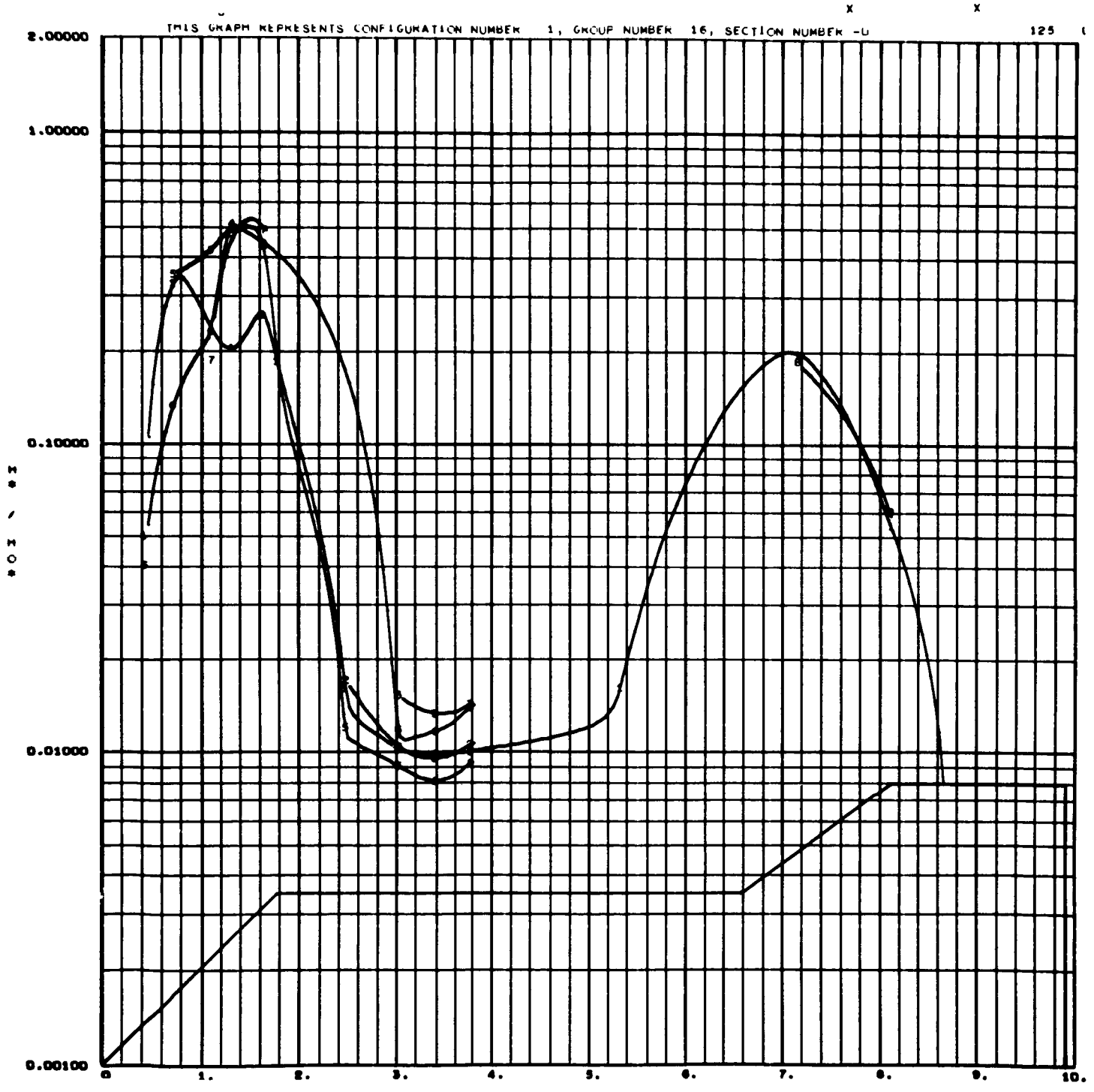
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 16
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



~~CONFIDENTIAL~~

[redacted]

HEAT TRANSFER TEST

APOLLO

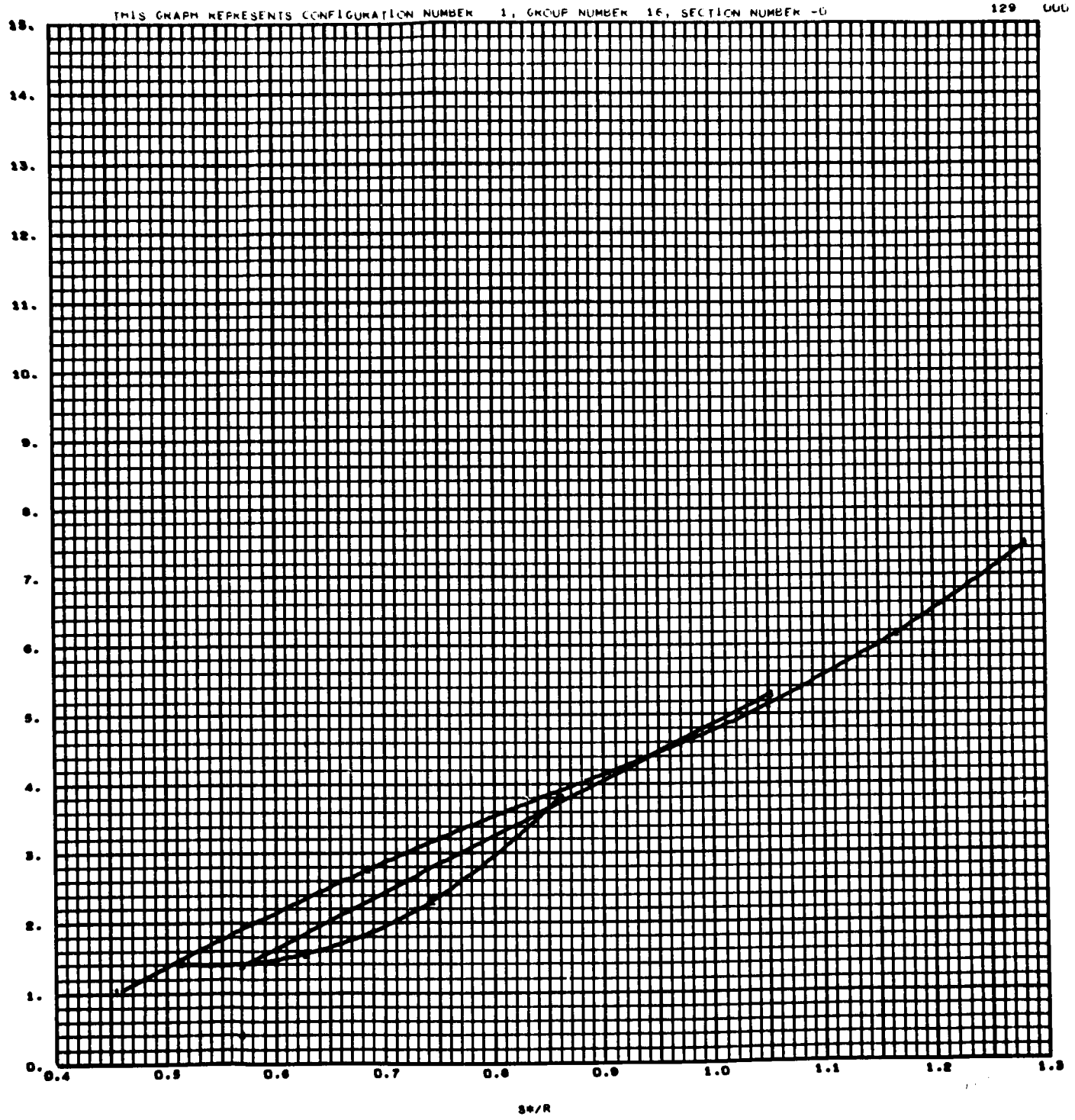
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 16
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-07
129 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 16, SECTION NUMBER -0



[redacted]

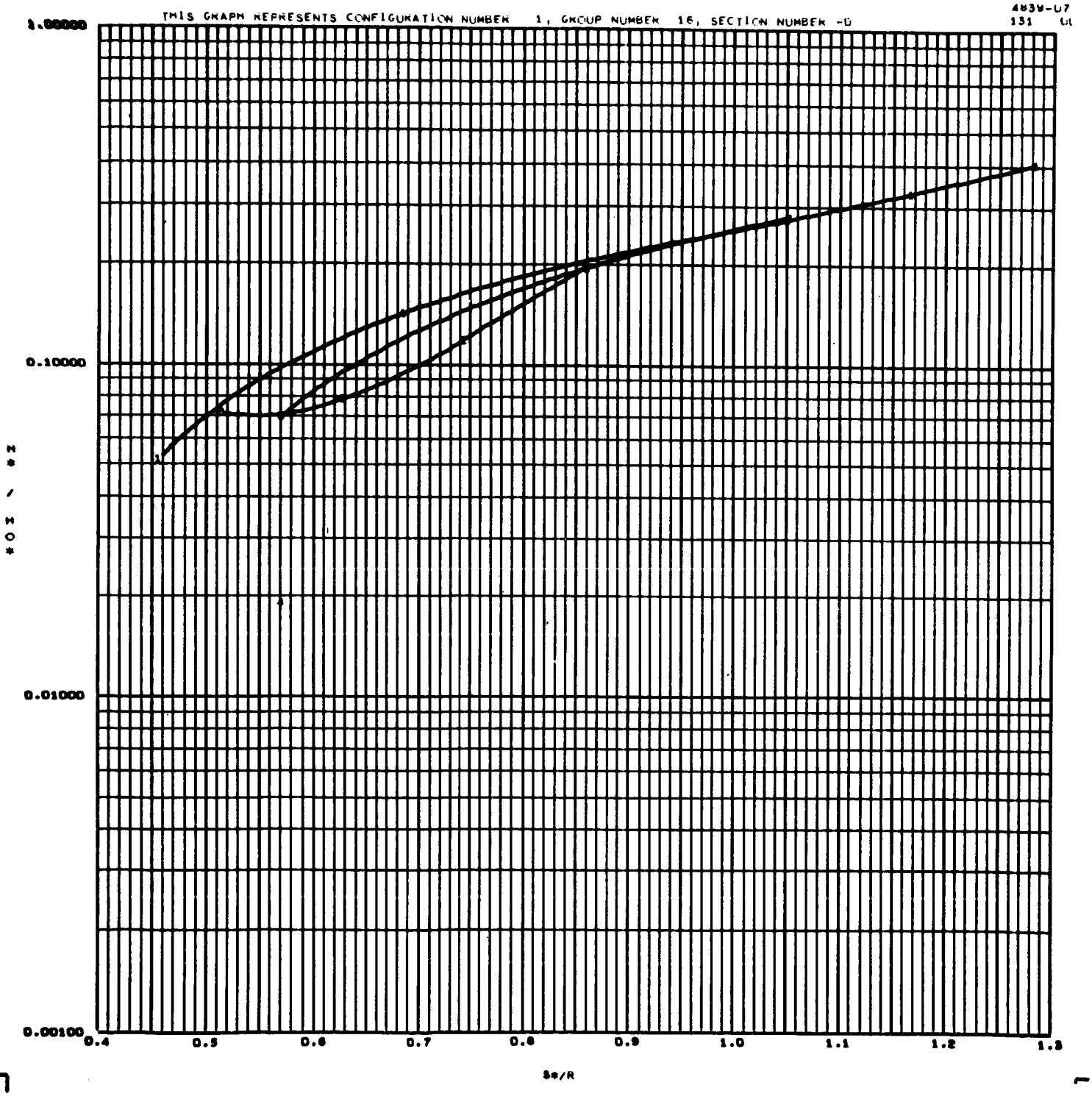
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 16
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
μ_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

[redacted]

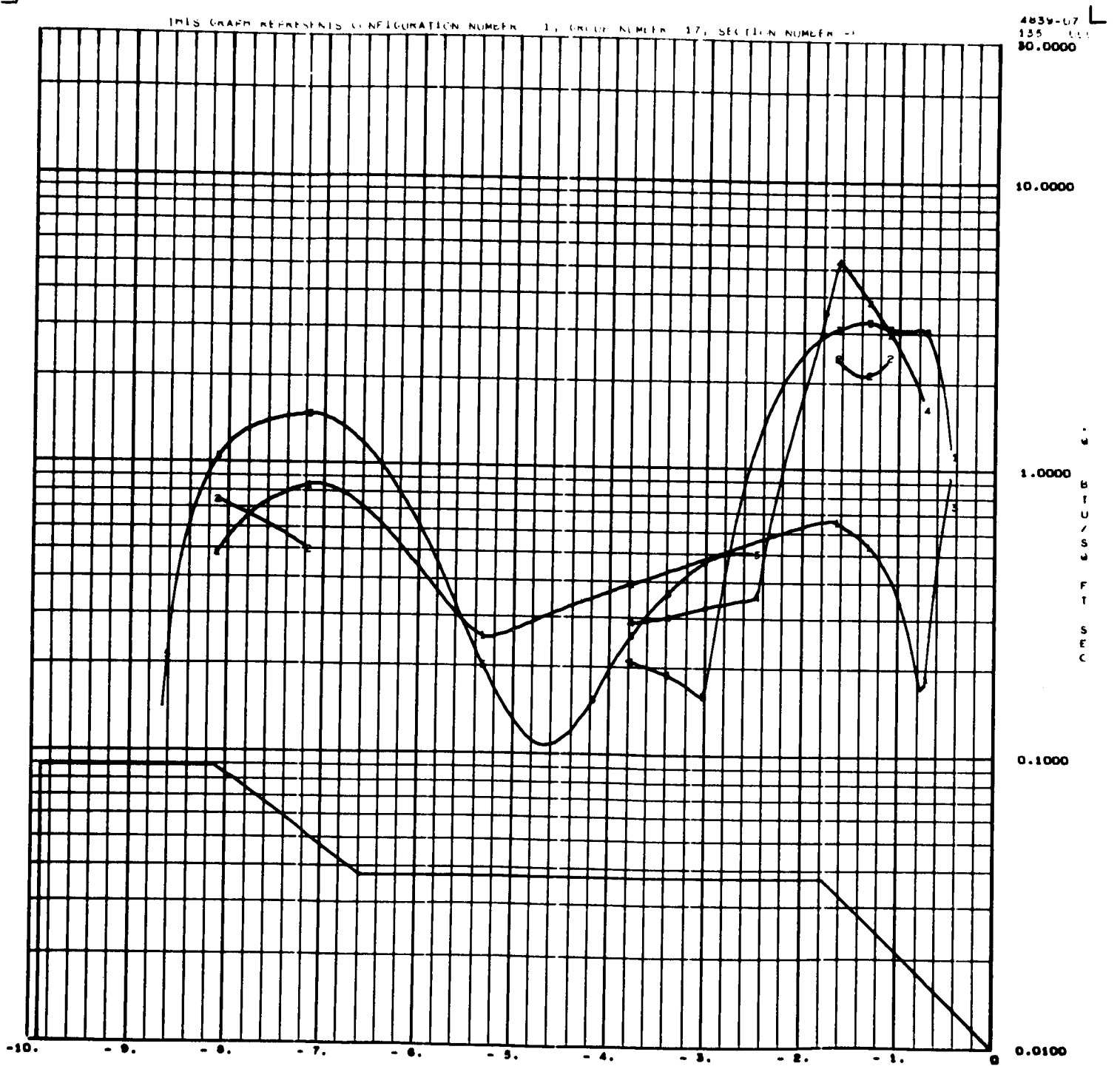
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 17
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

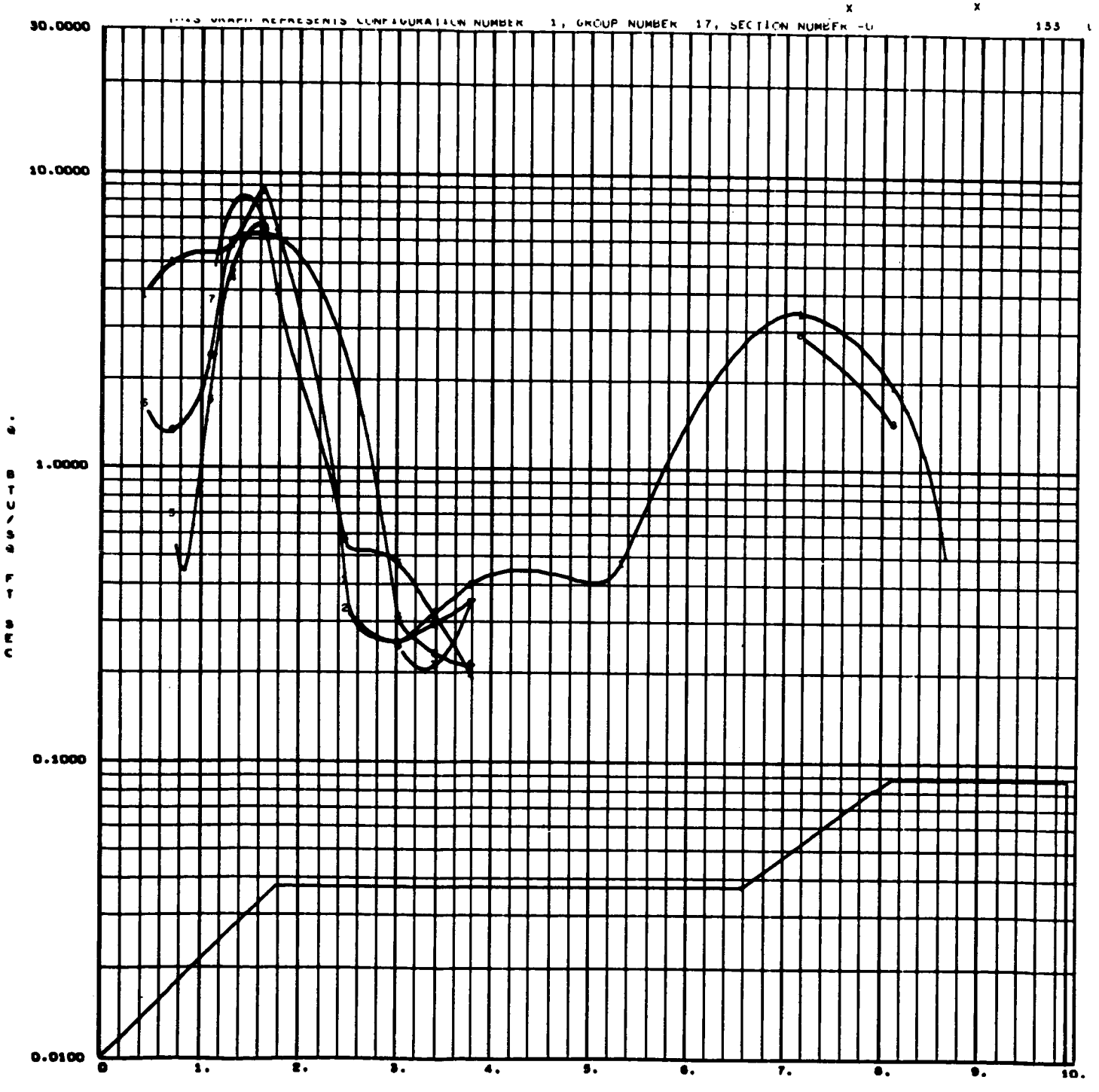
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 17
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_O^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1729.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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~~CONFIDENTIAL~~

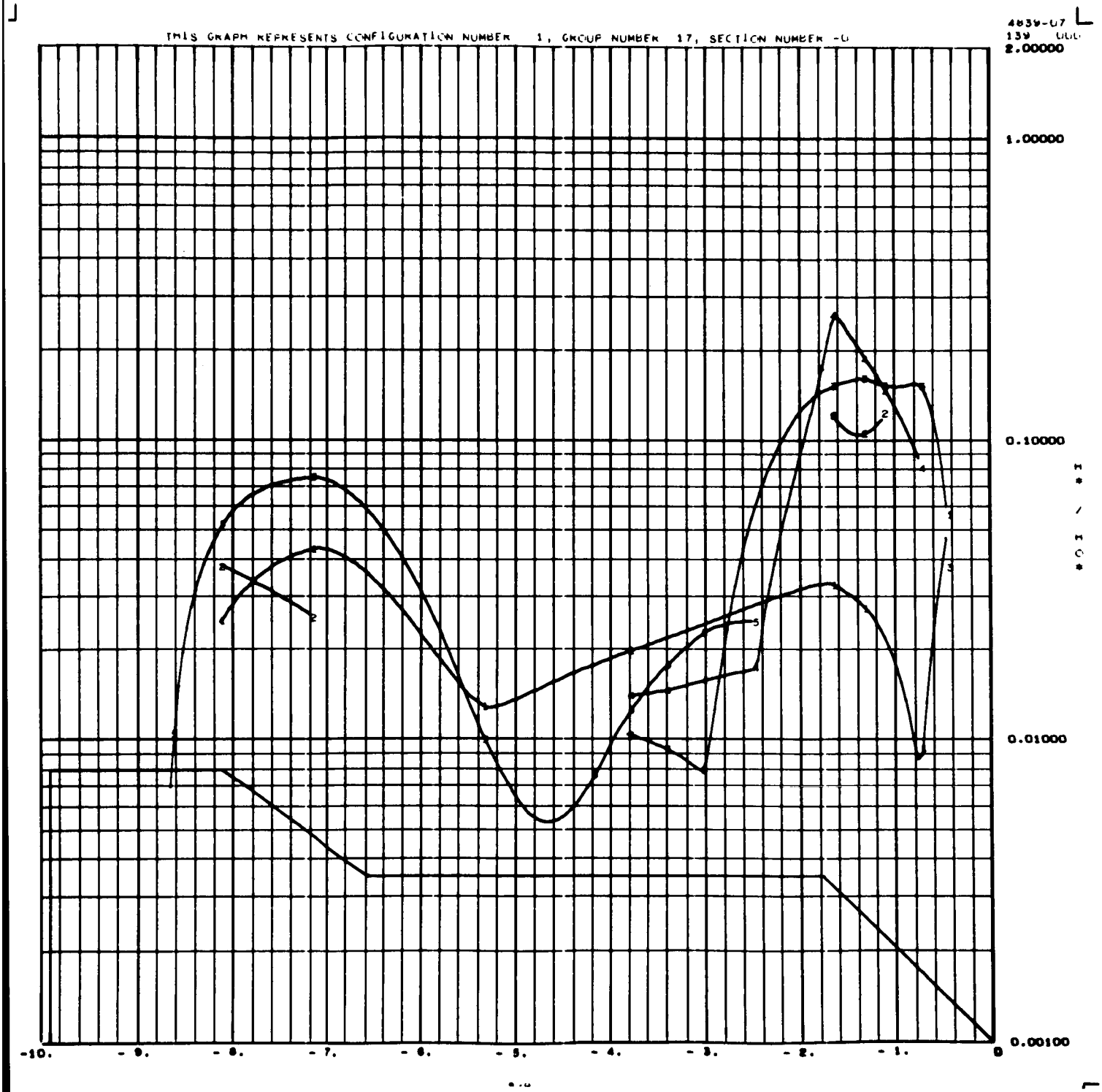
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 17
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_C^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

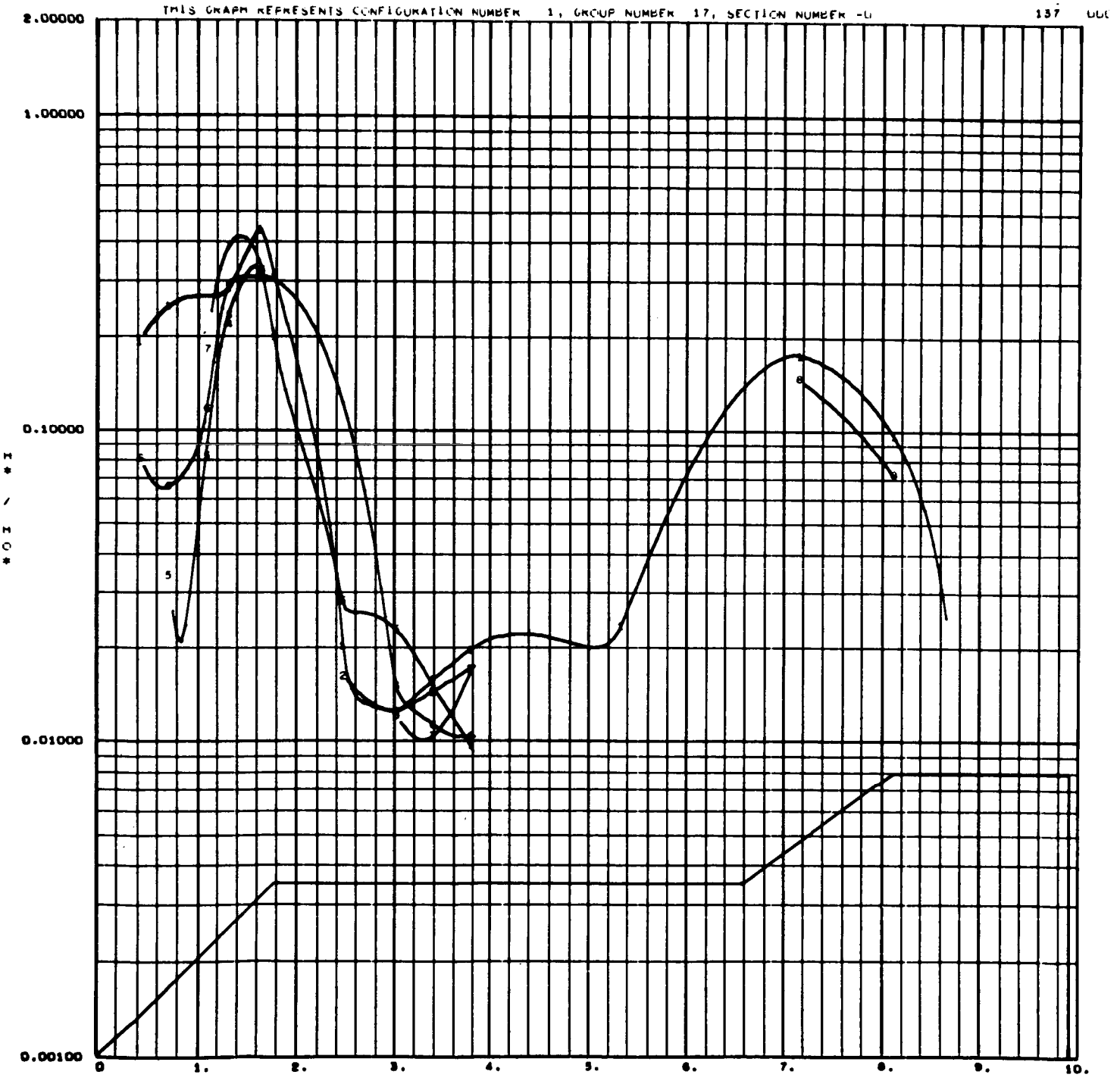
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 17
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
μ_0^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

~~CONFIDENTIAL~~

HEAT TRANSFER TEST

APOLLO

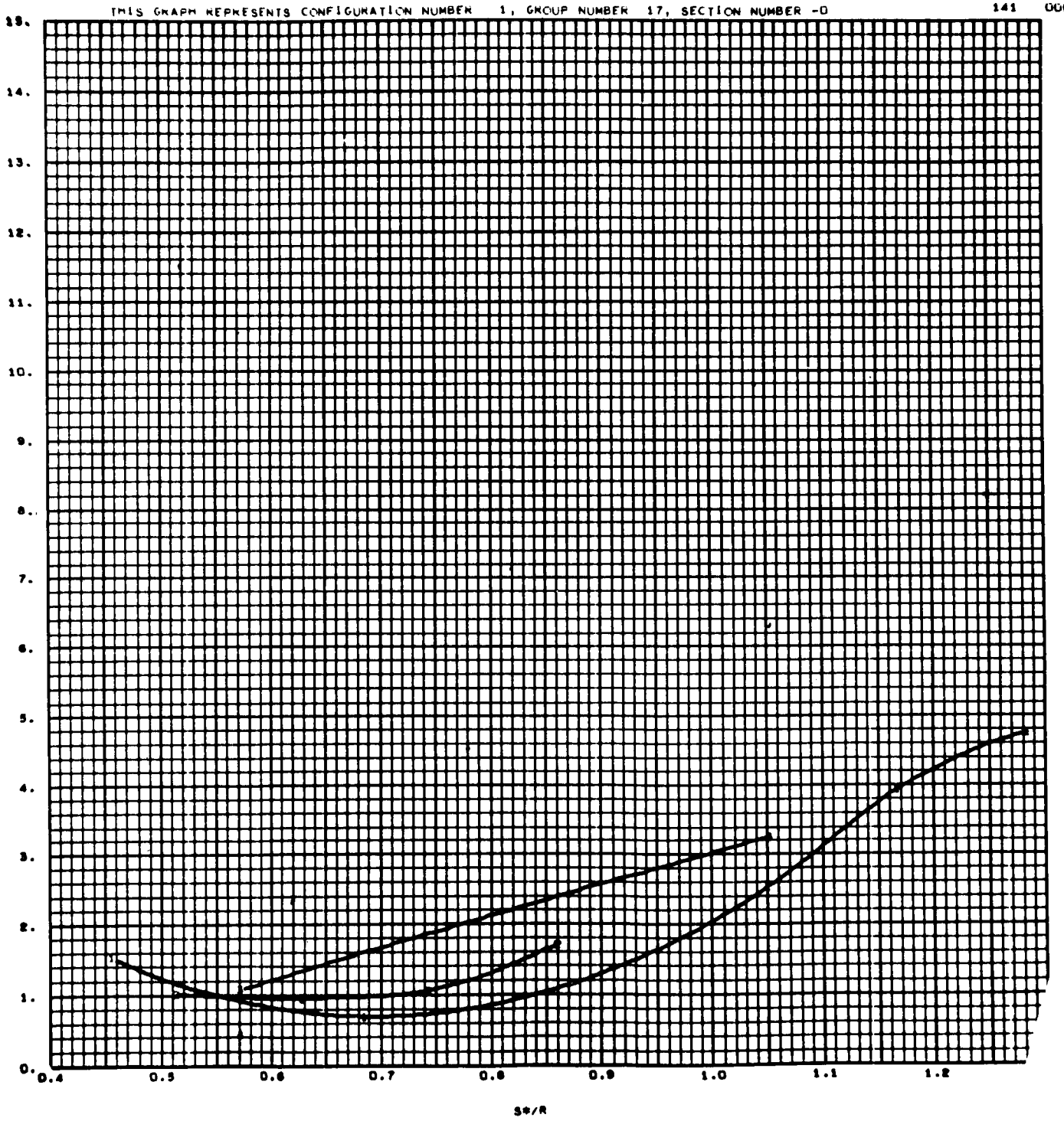
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 17
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-07 L
141 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 17, SECTION NUMBER -D



~~CONFIDENTIAL~~

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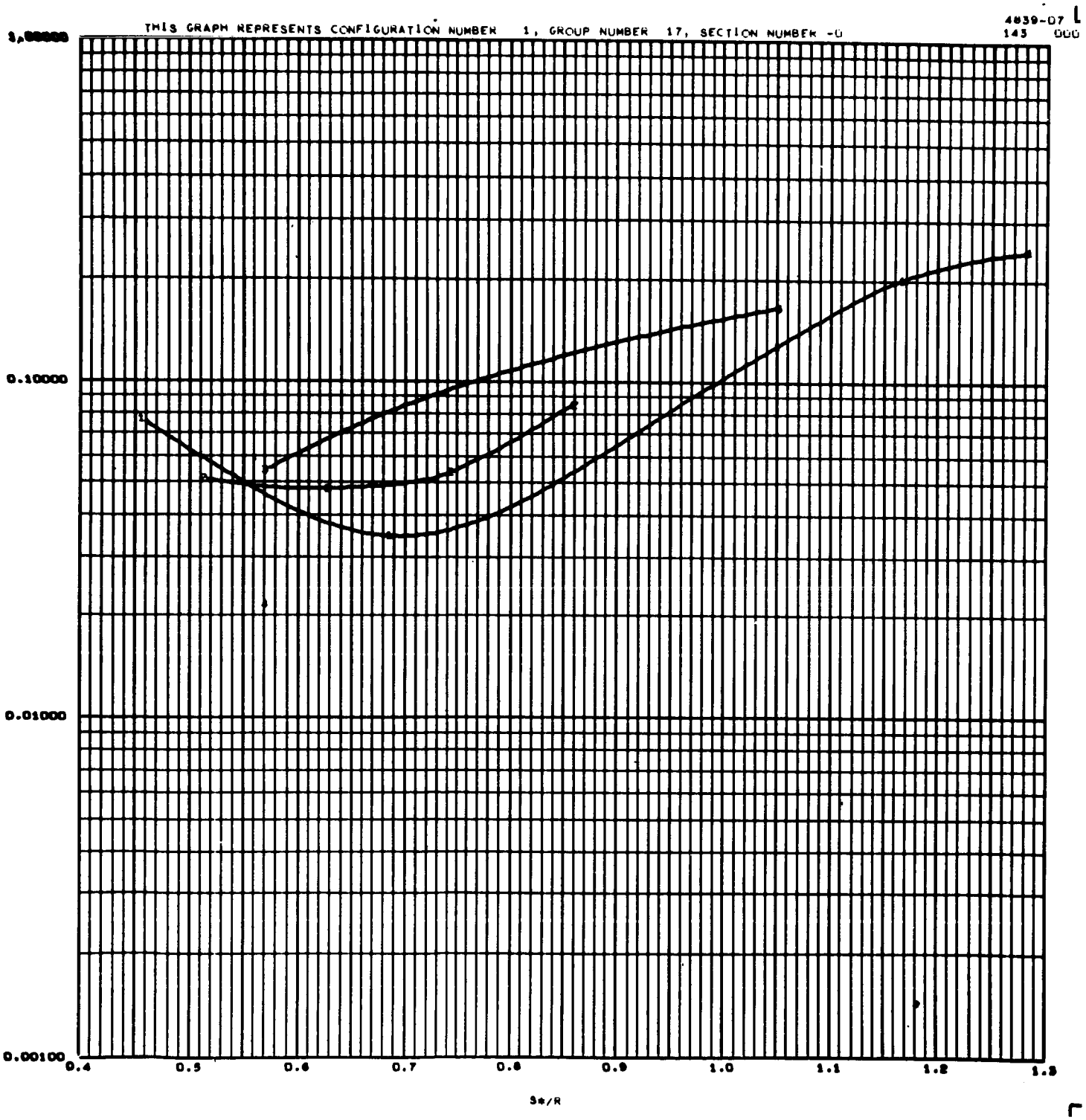
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 17
TOTAL PRESSURE 459.4 PSIA
REYNOLDS NUMBER PER INCH 0.0547 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1729.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



CONFIDENTIAL

[redacted]

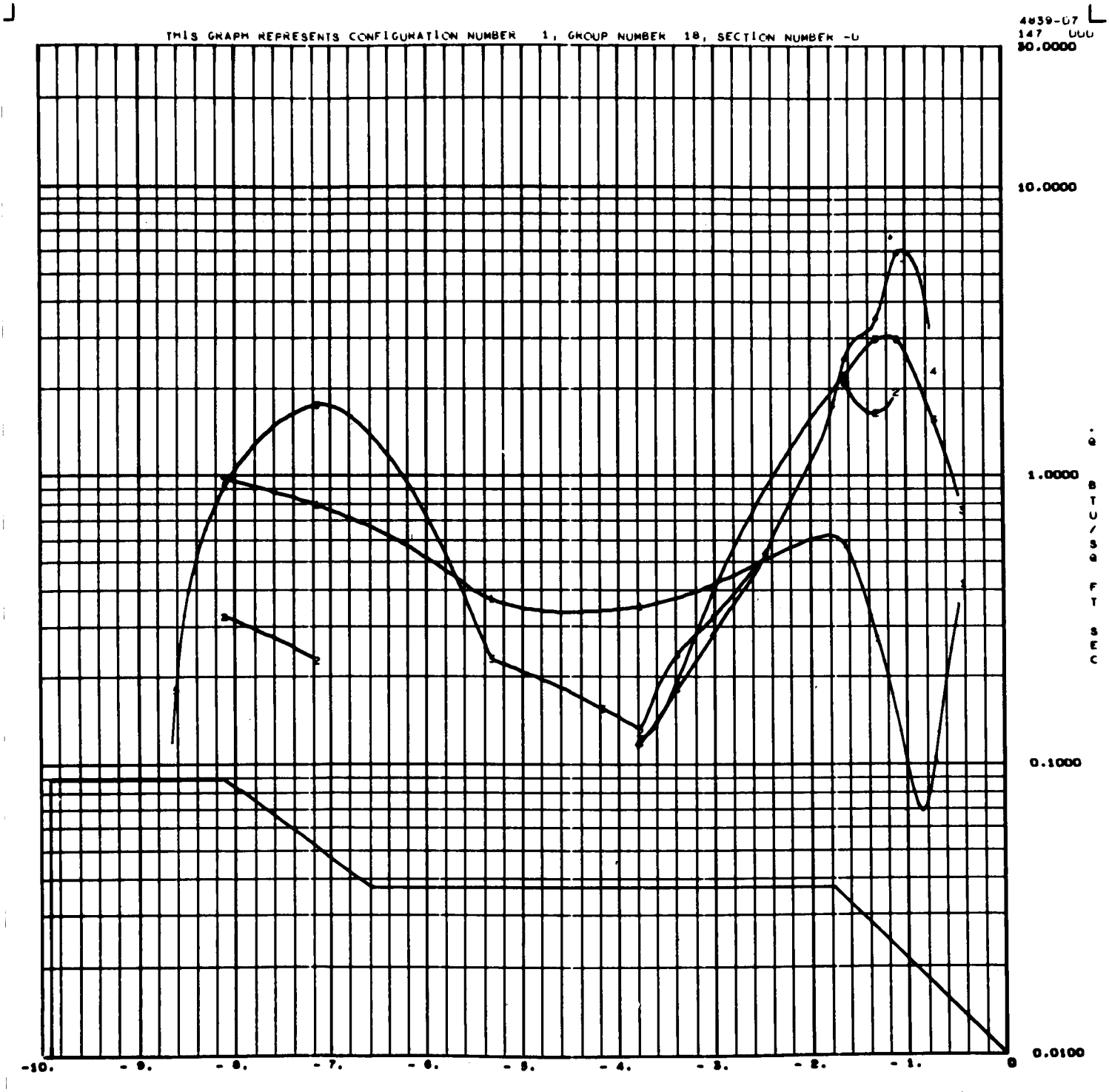
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 18
TOTAL PRESSURE 457.2 PSIA
REYNOLDS NUMBER PER INCH 0.0542 X 10^6
M_C* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]CONFIDENTIAL

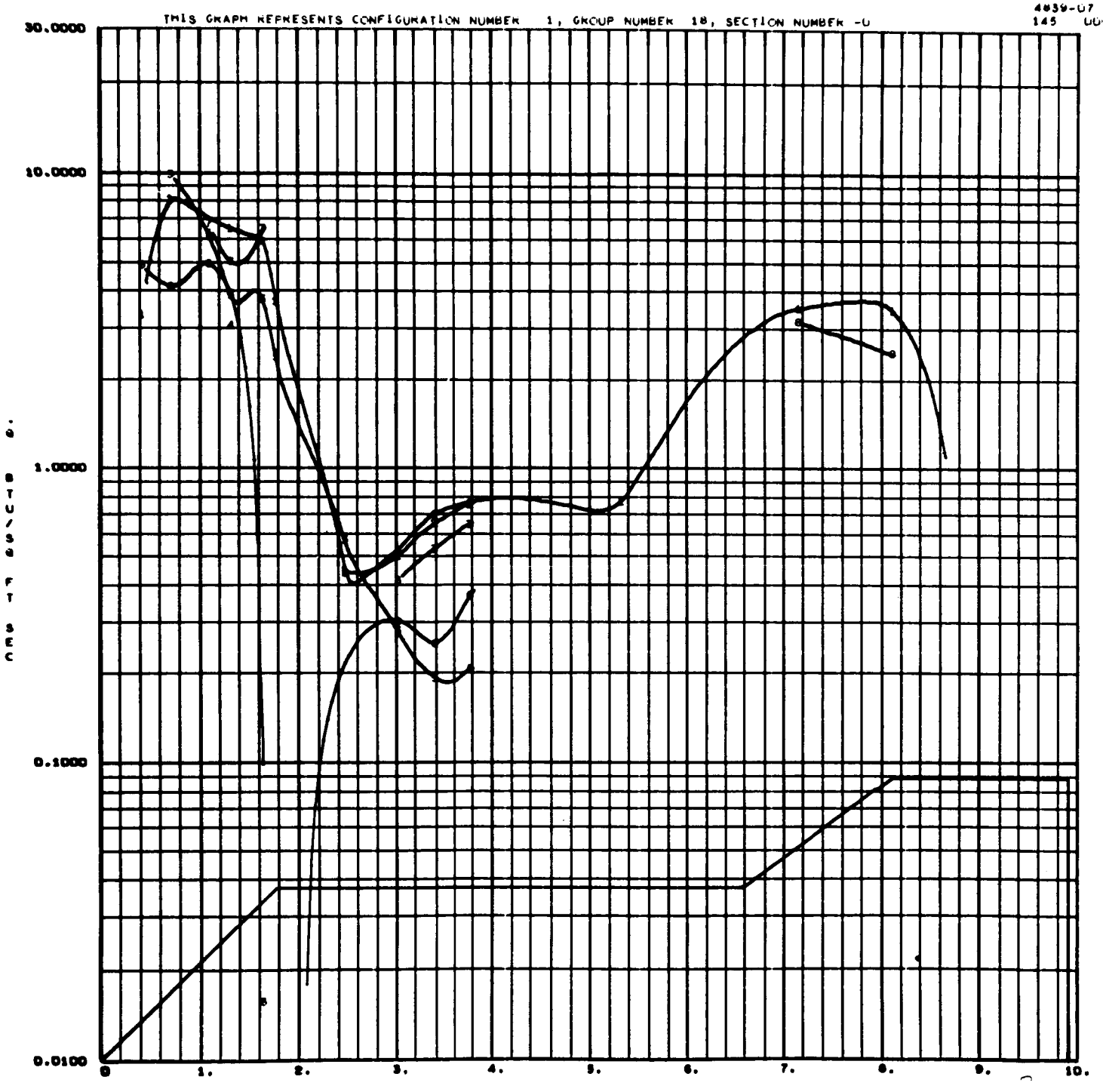
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 18
TOTAL PRESSURE 457.2 PSIA
REYNOLDS NUMBER PER INCH 0.0542 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]CONFIDENTIAL

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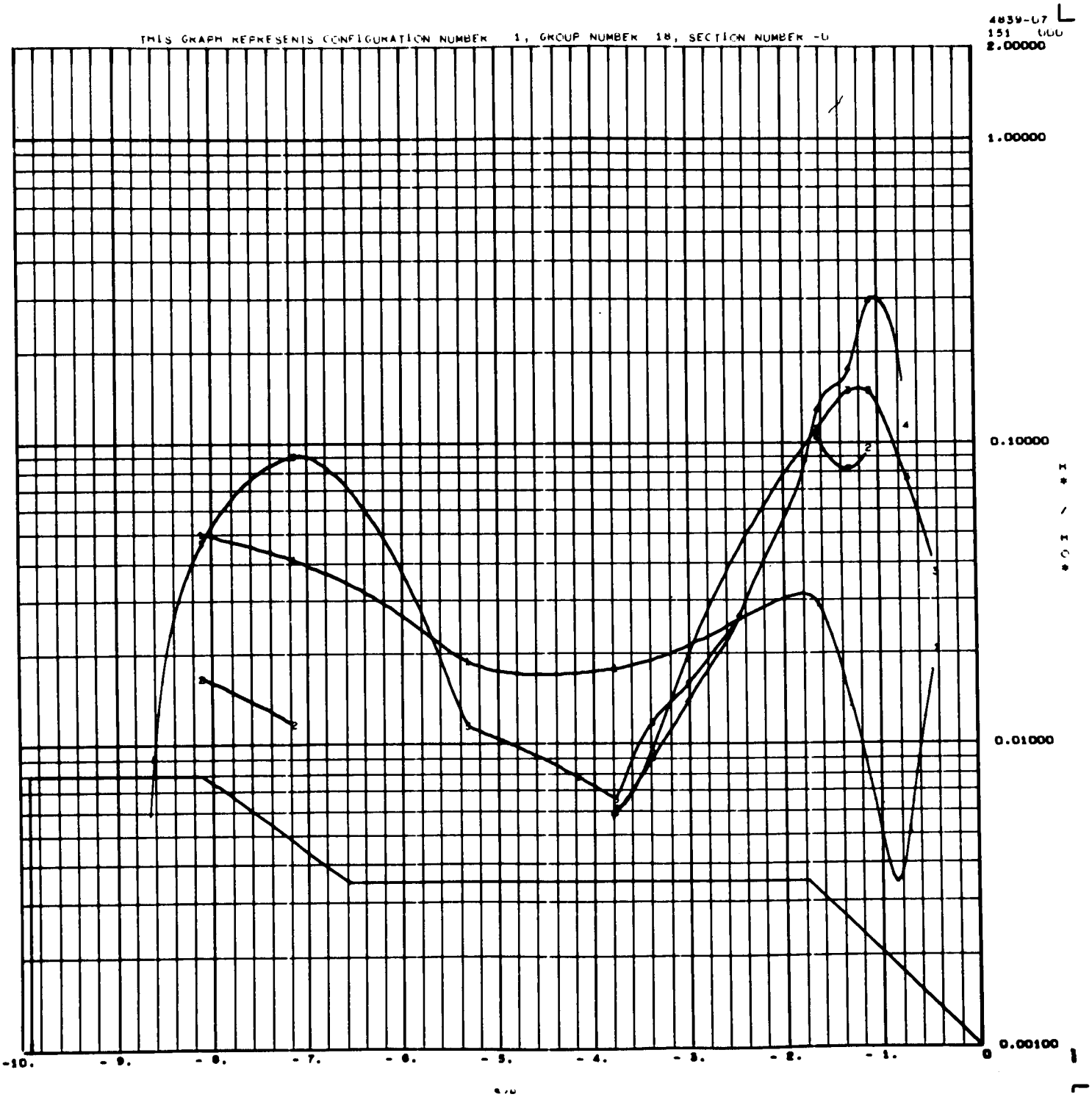
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 18
TOTAL PRESSURE 457.2 PSIA
REYNOLDS NUMBER PER INCH 0.0542 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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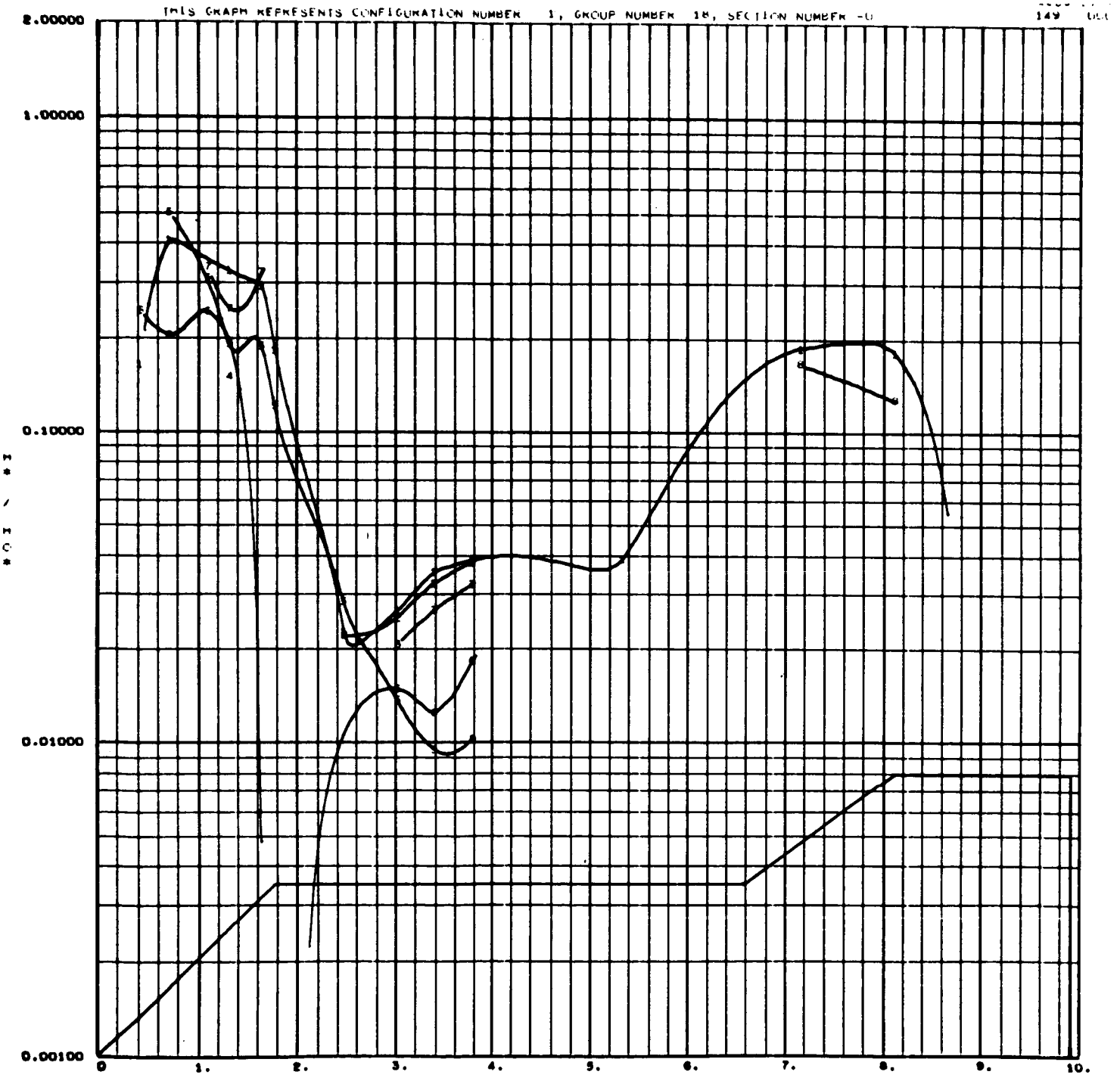
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 18
TOTAL PRESSURE 457.2 PSIA
REYNOLDS NUMBER PER INCH 0.0542 x 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



~~CONFIDENTIAL~~

[redacted]

HEAT TRANSFER TEST

APOLLO

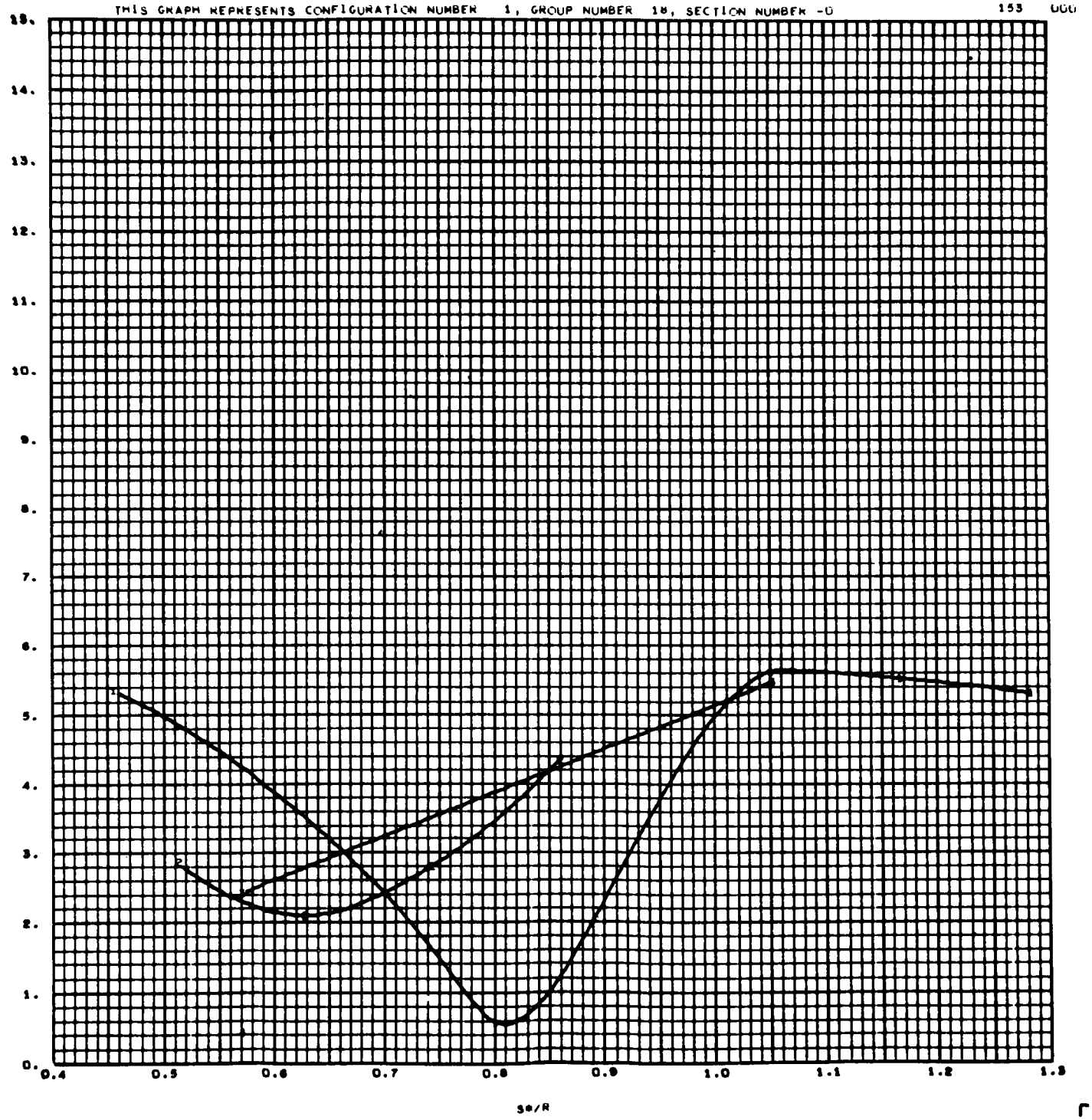
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 18
TOTAL PRESSURE 457.2 PSIA
REYNOLDS NUMBER PER INCH 0.0542 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-07
153 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 18, SECTION NUMBER -0



[redacted]

[redacted]

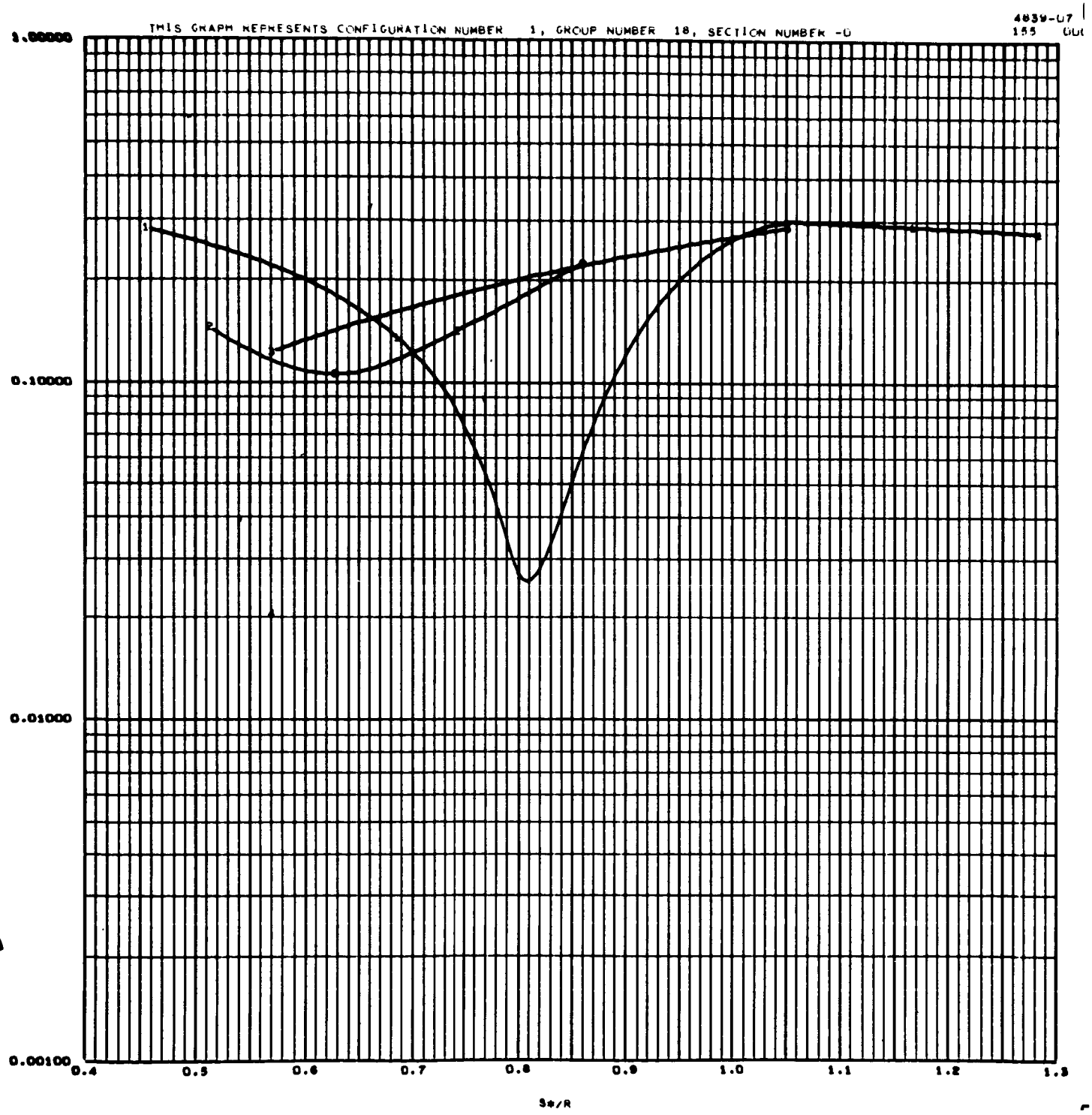
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.09
GROUP NO. 18
TOTAL PRESSURE 457.2 PSIA
REYNOLDS NUMBER PER INCH 0.0542 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

[redacted]

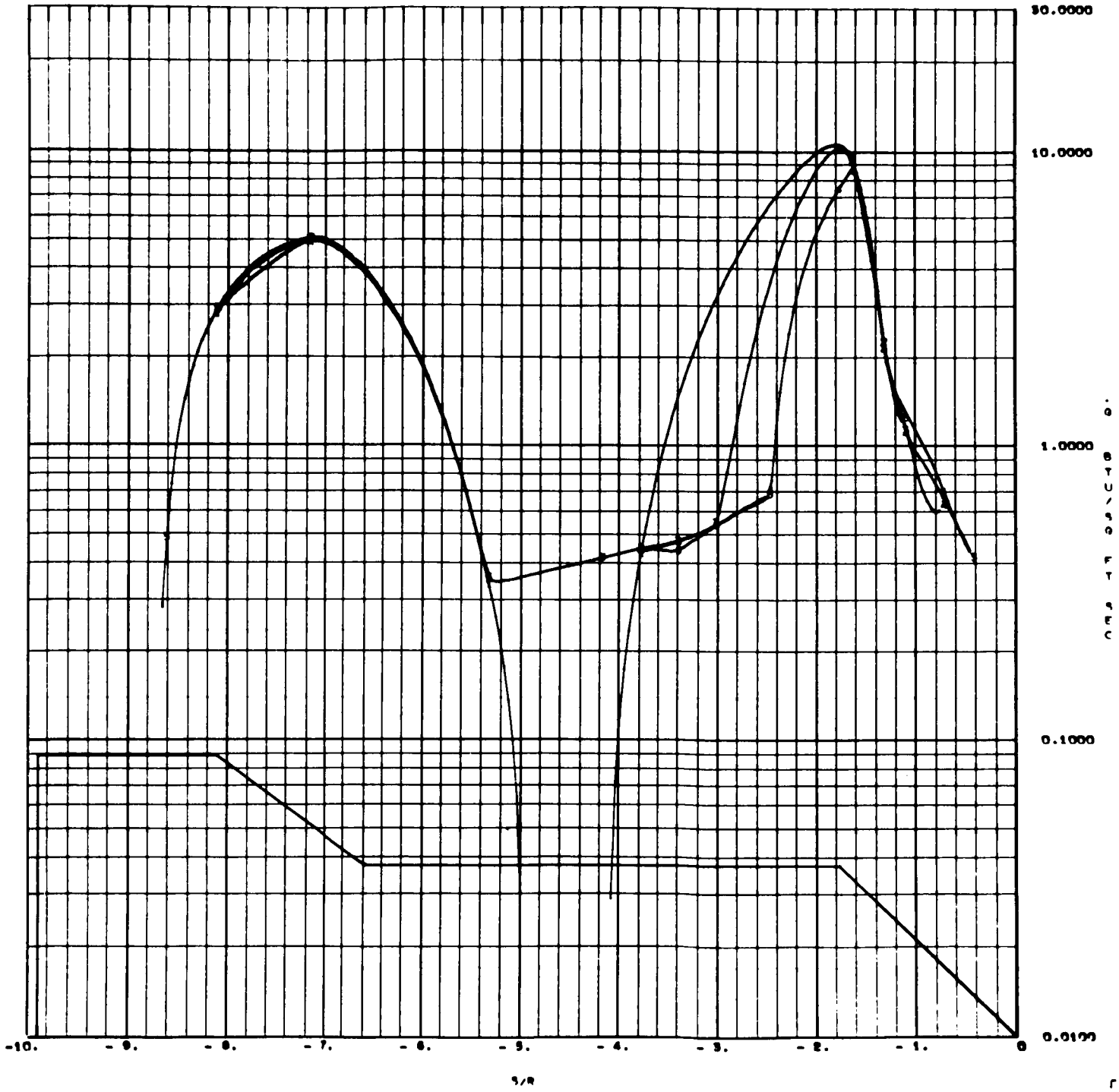
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.15
GROUP NO. 30
TOTAL PRESSURE 747.9 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1781.80 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

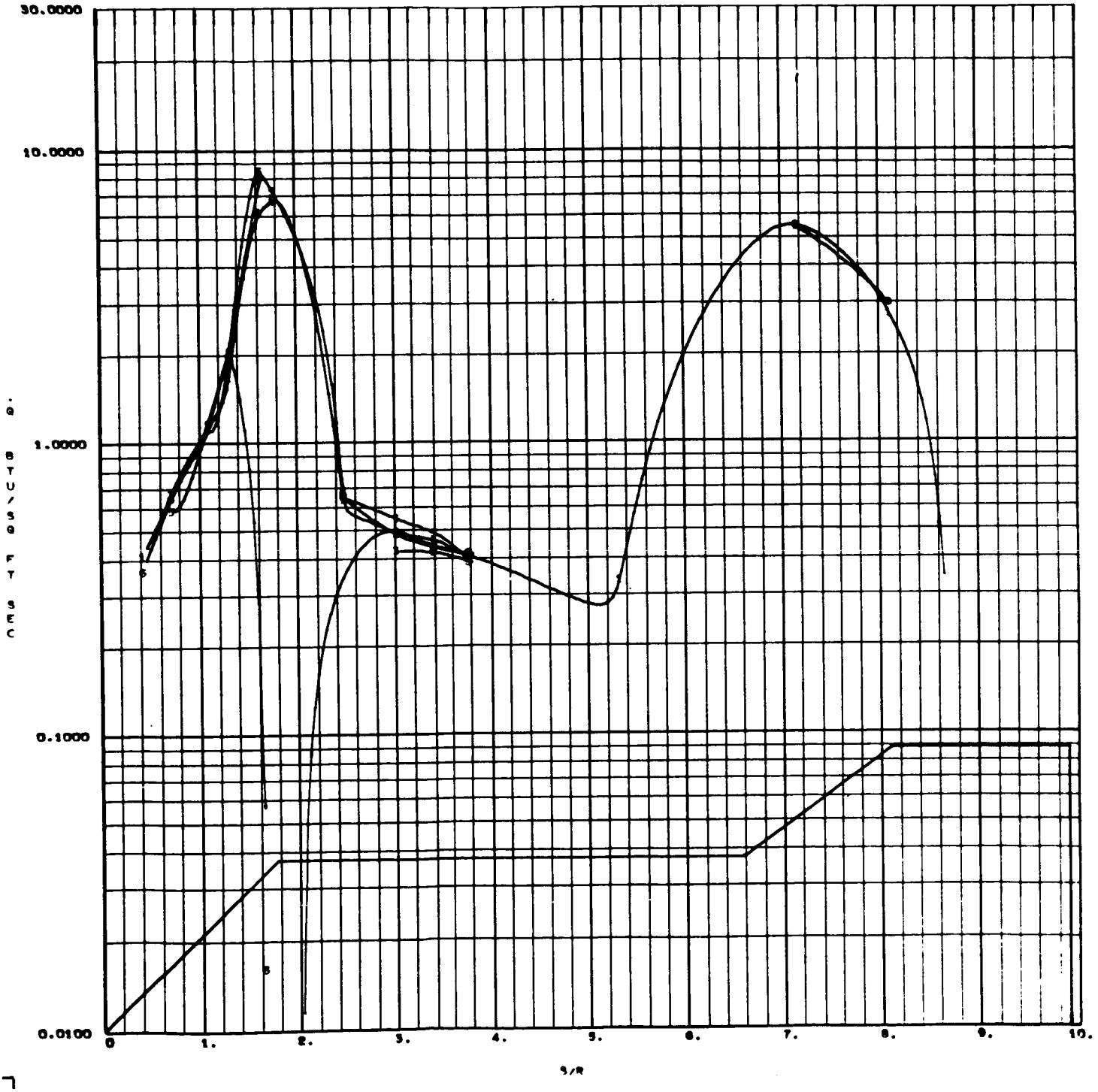
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 30
TOTAL PRESSURE 747.9 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_O^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1781.80 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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[redacted]

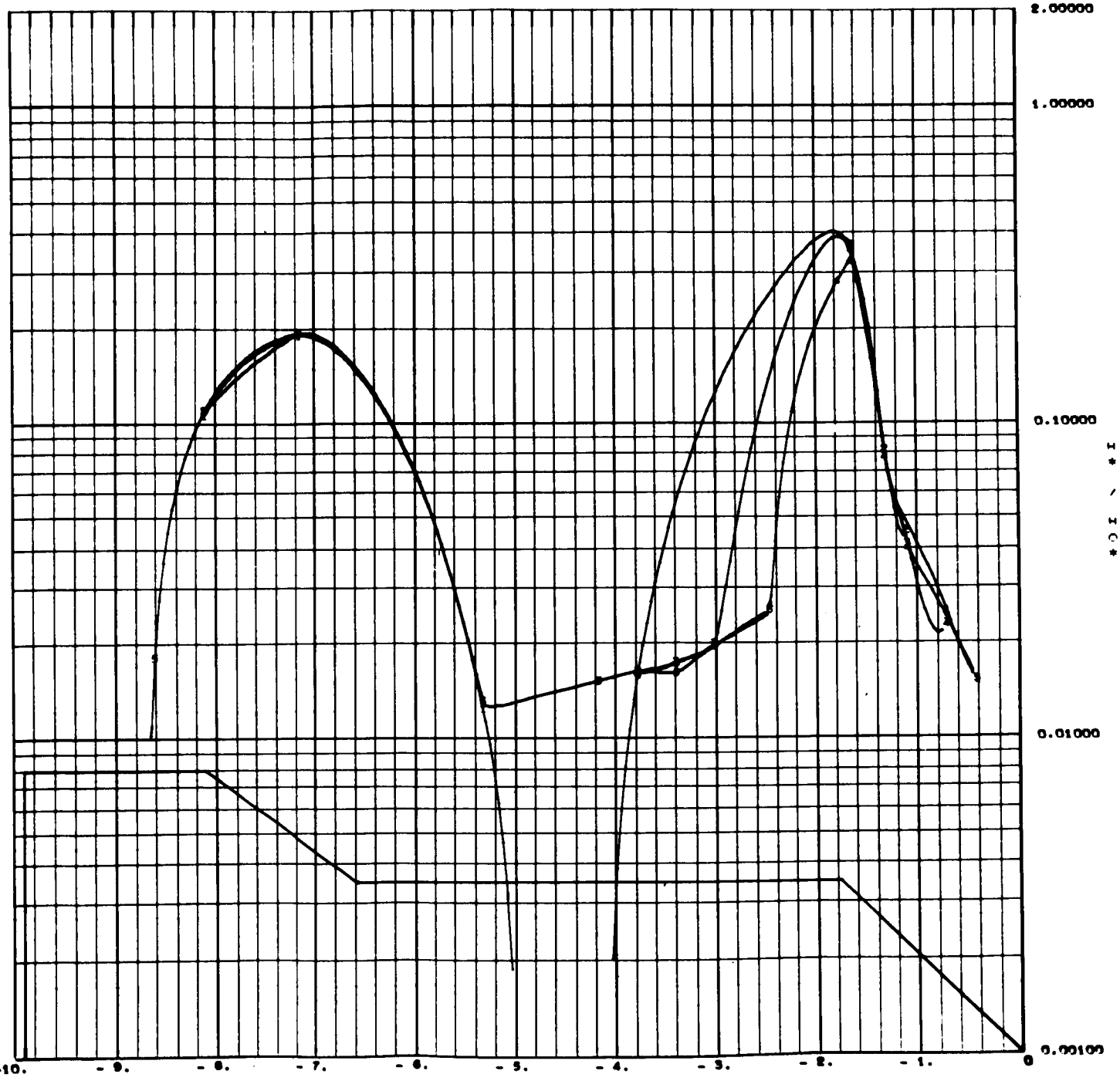
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 30
TOTAL PRESSURE 747.9 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1781.80 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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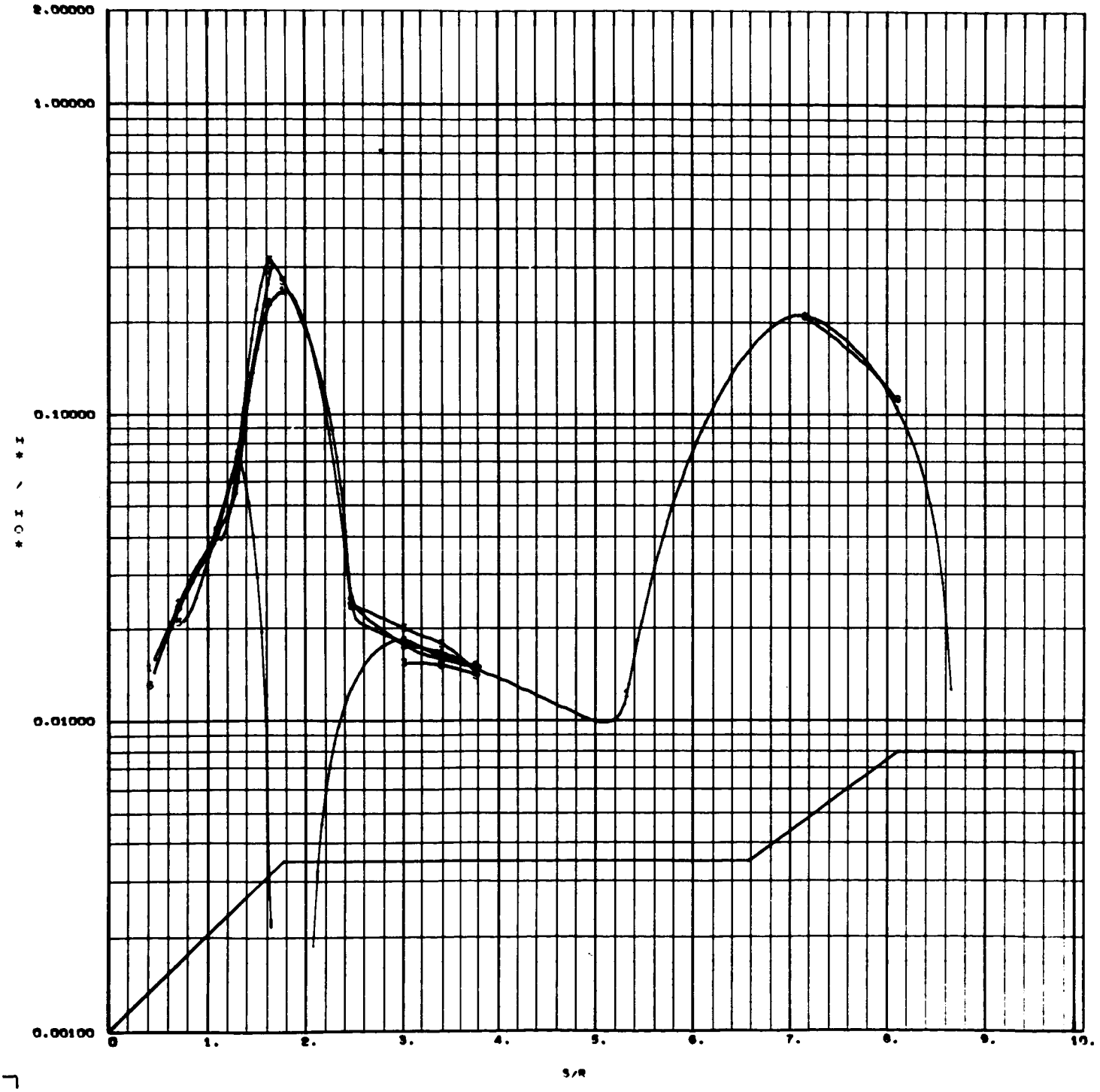
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 30
TOTAL PRESSURE 747.9 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1781.80 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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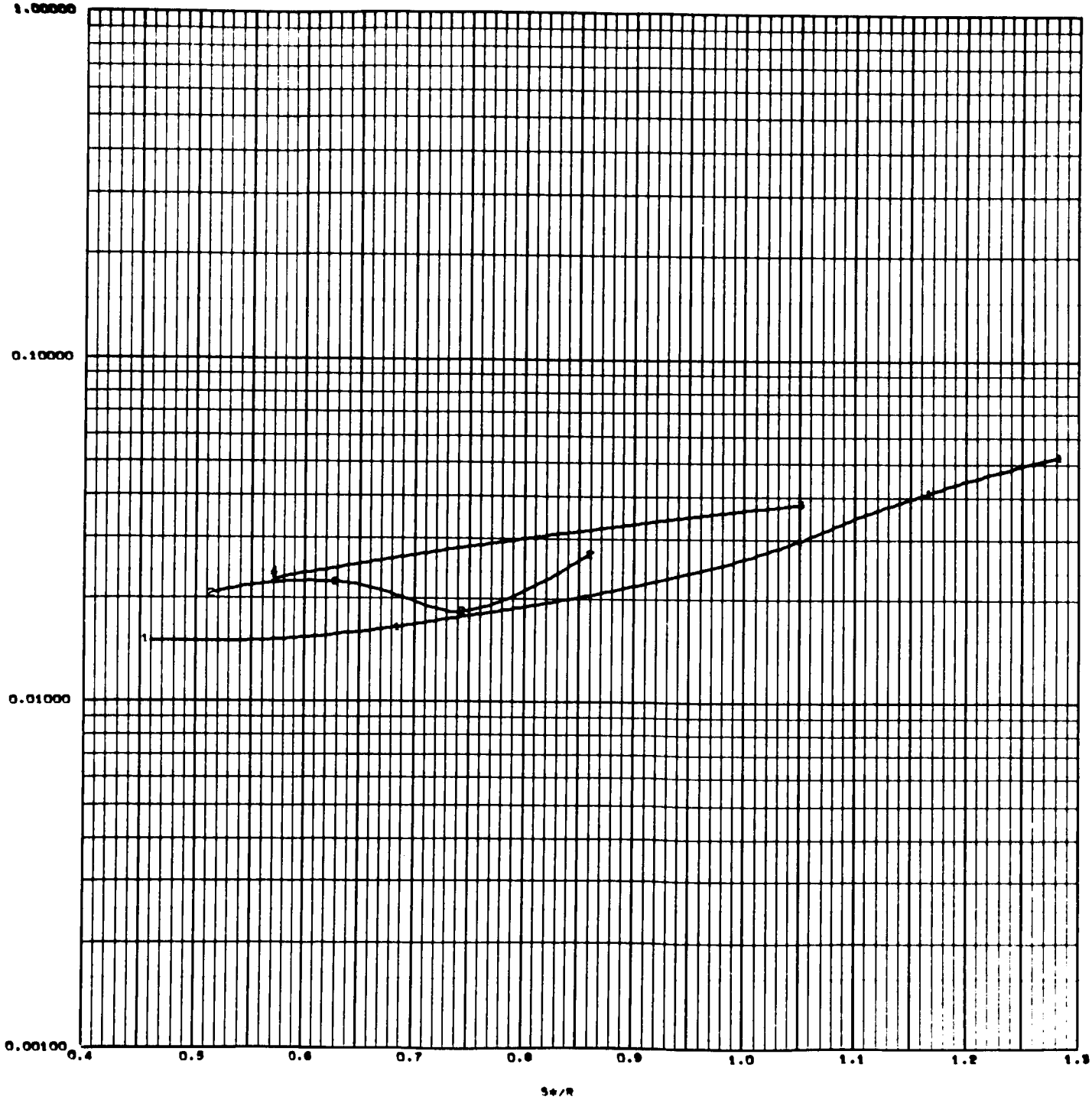
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 30
TOTAL PRESSURE 747.9 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1781.80 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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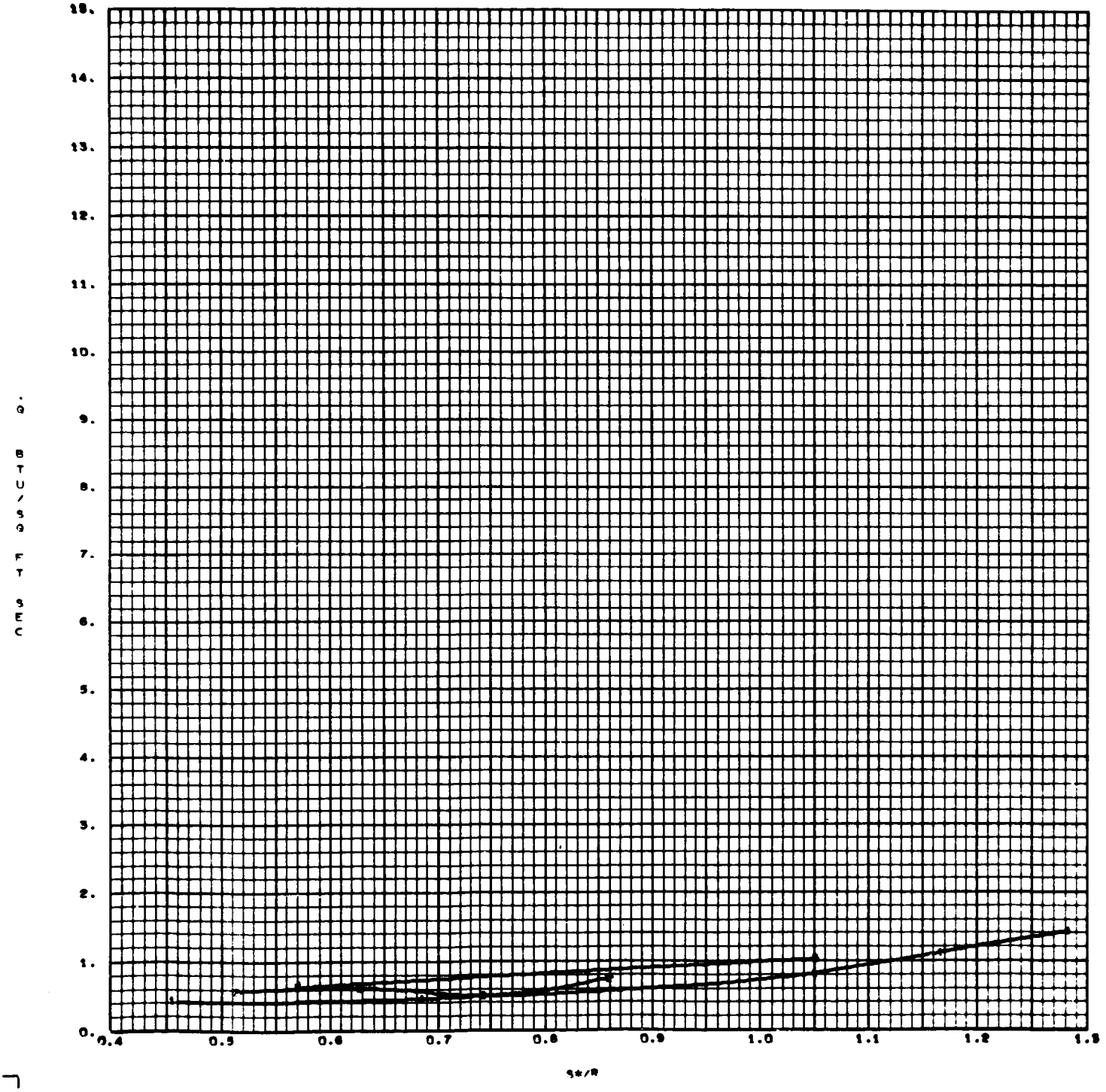
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 30
TOTAL PRESSURE 747.9 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1781.80 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



~~CONFIDENTIAL~~

[redacted]

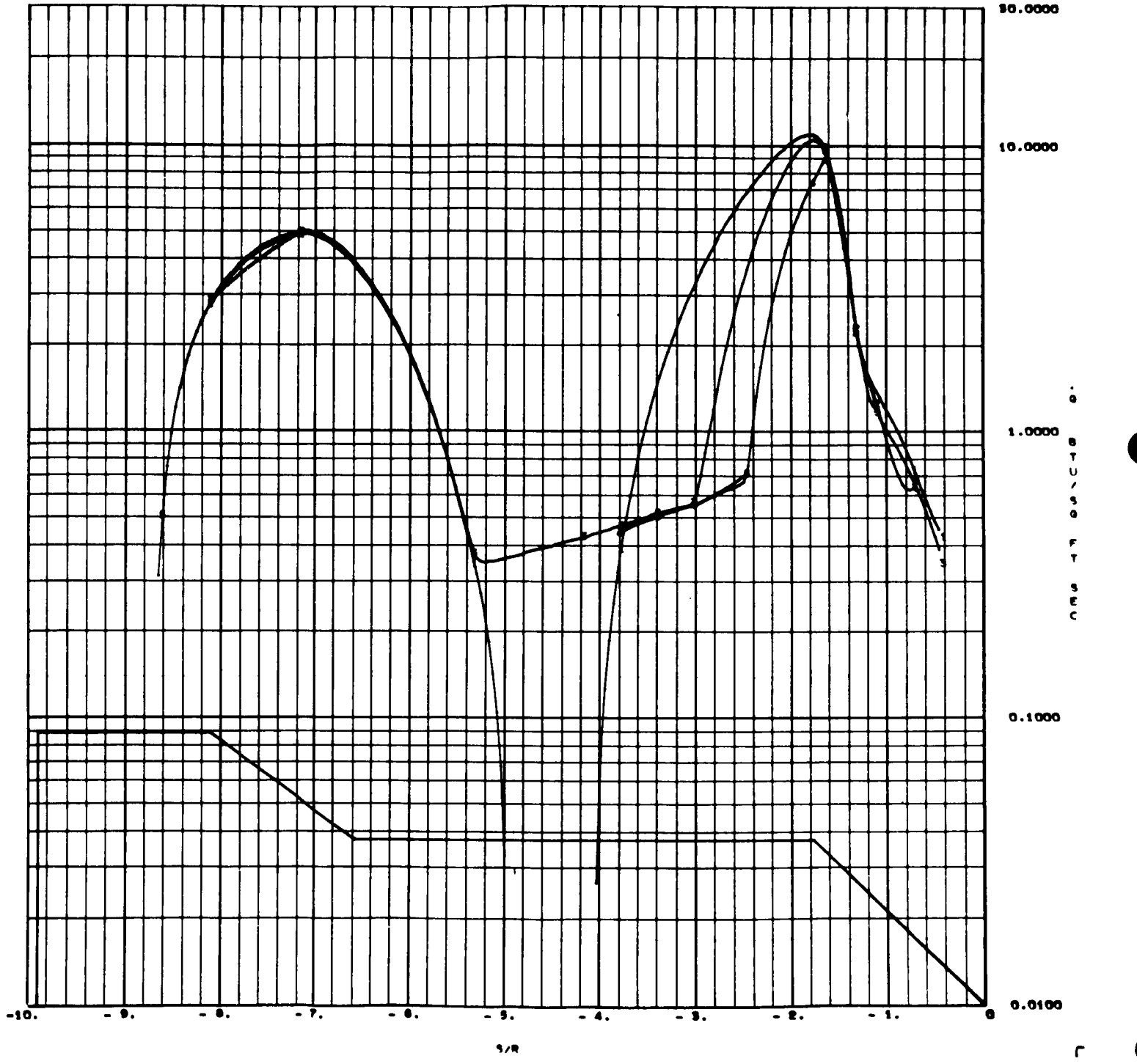
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 34
TOTAL PRESSURE 748.4 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

CONFIDENTIAL

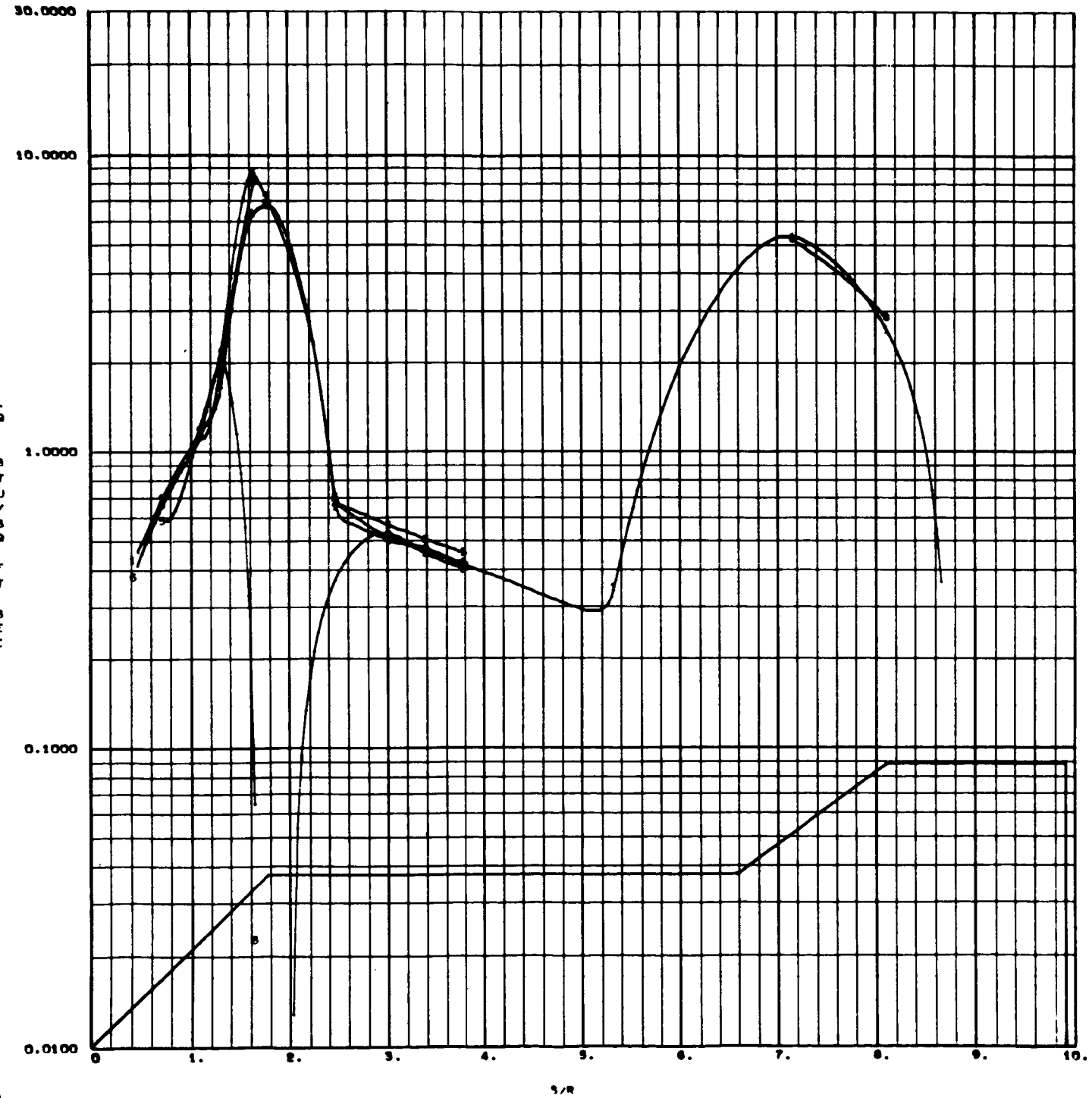
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 34
TOTAL PRESSURE 748.4 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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[redacted]

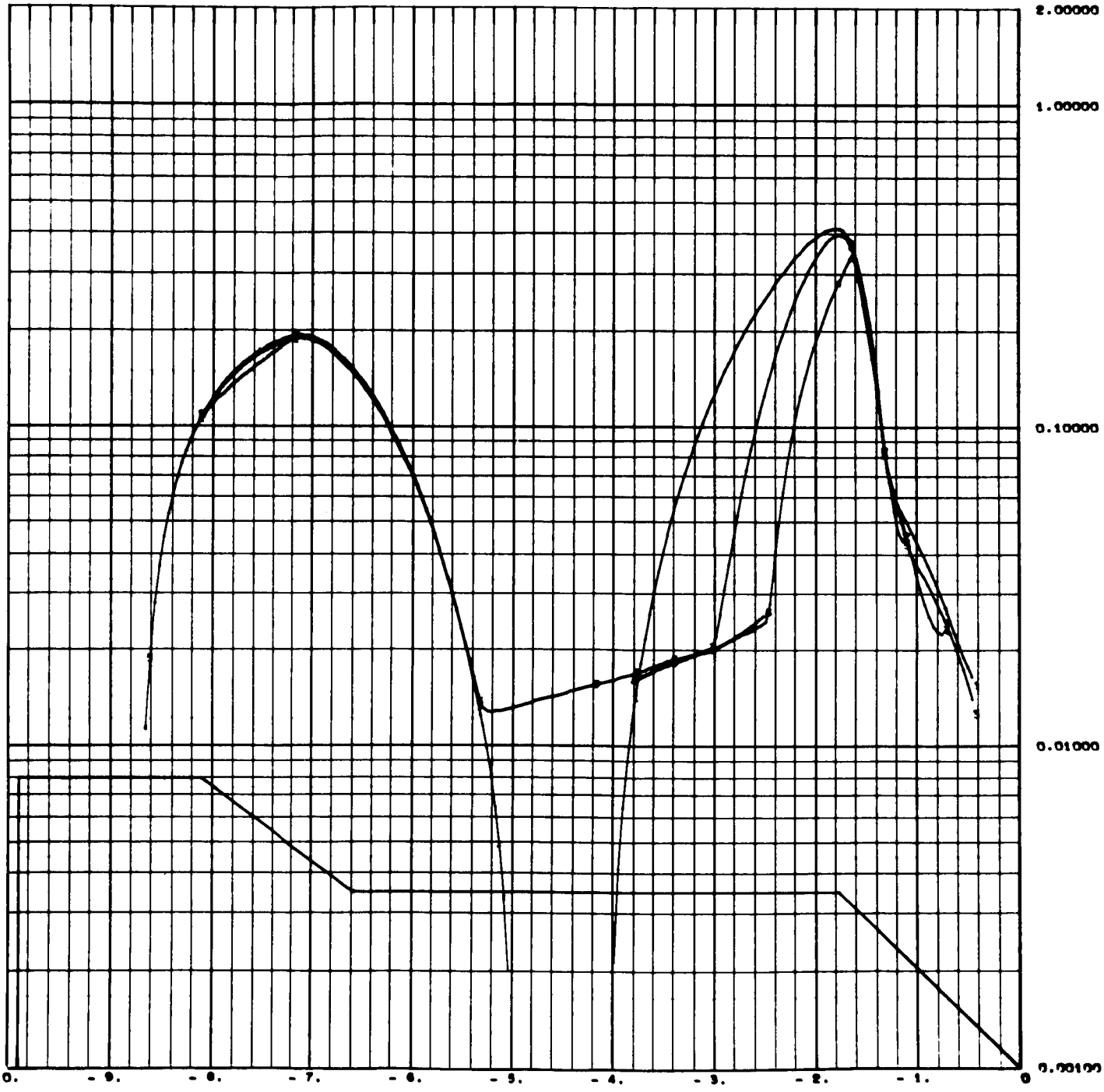
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 34
TOTAL PRESSURE 748.4 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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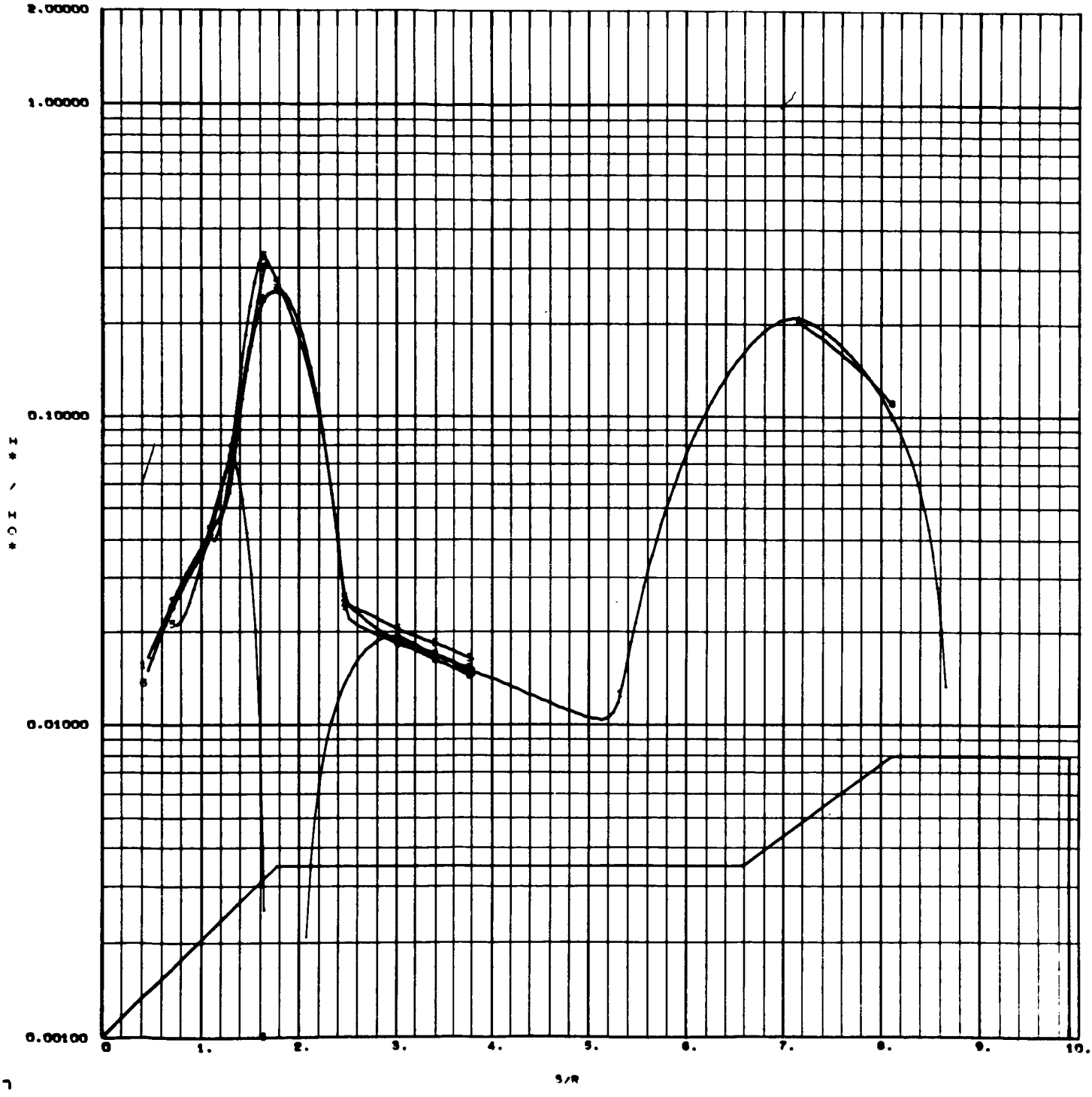
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 34
TOTAL PRESSURE 748.4 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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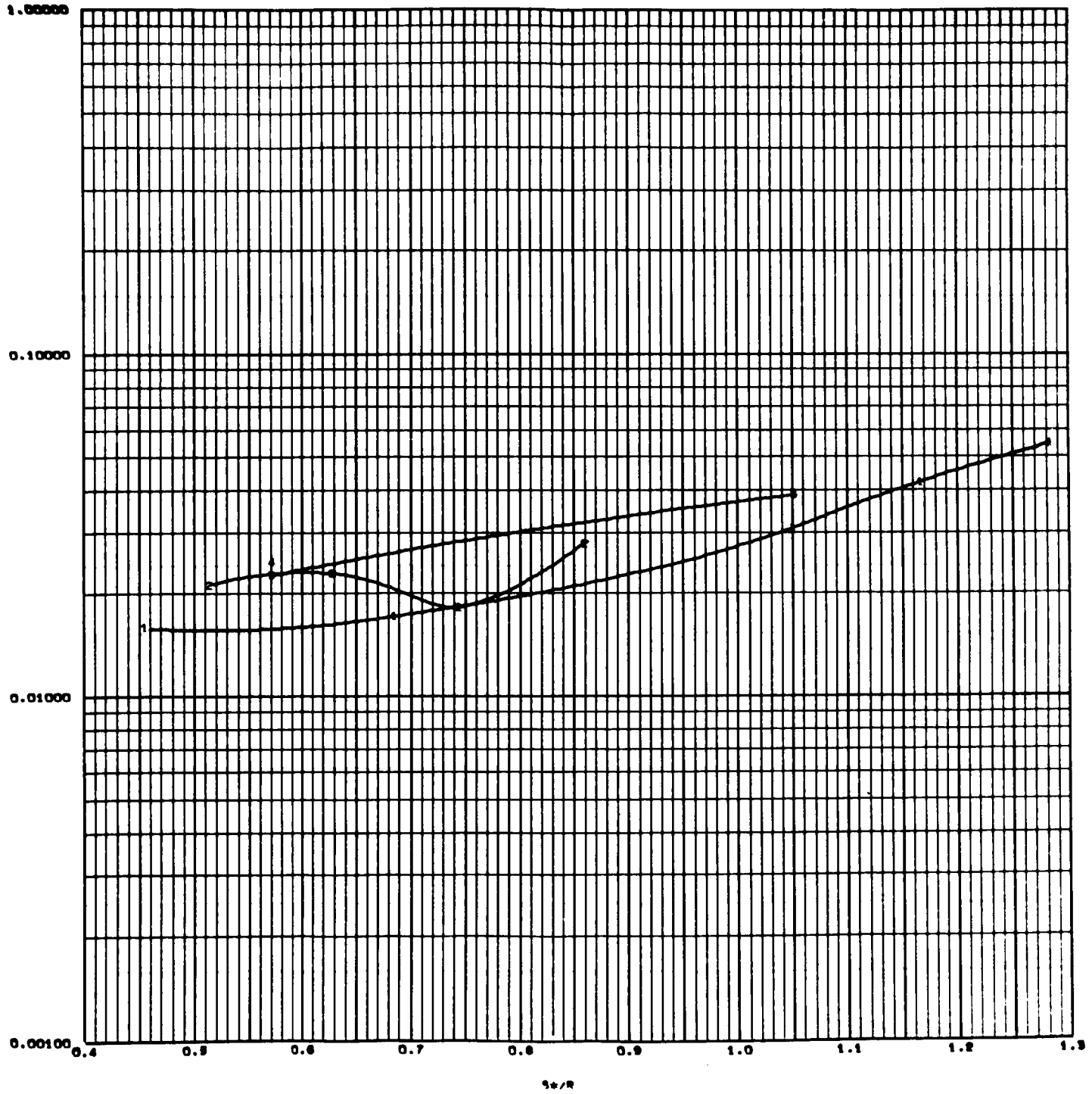
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.15
GROUP NO. 34
TOTAL PRESSURE 748.4 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



CONFIDENTIAL

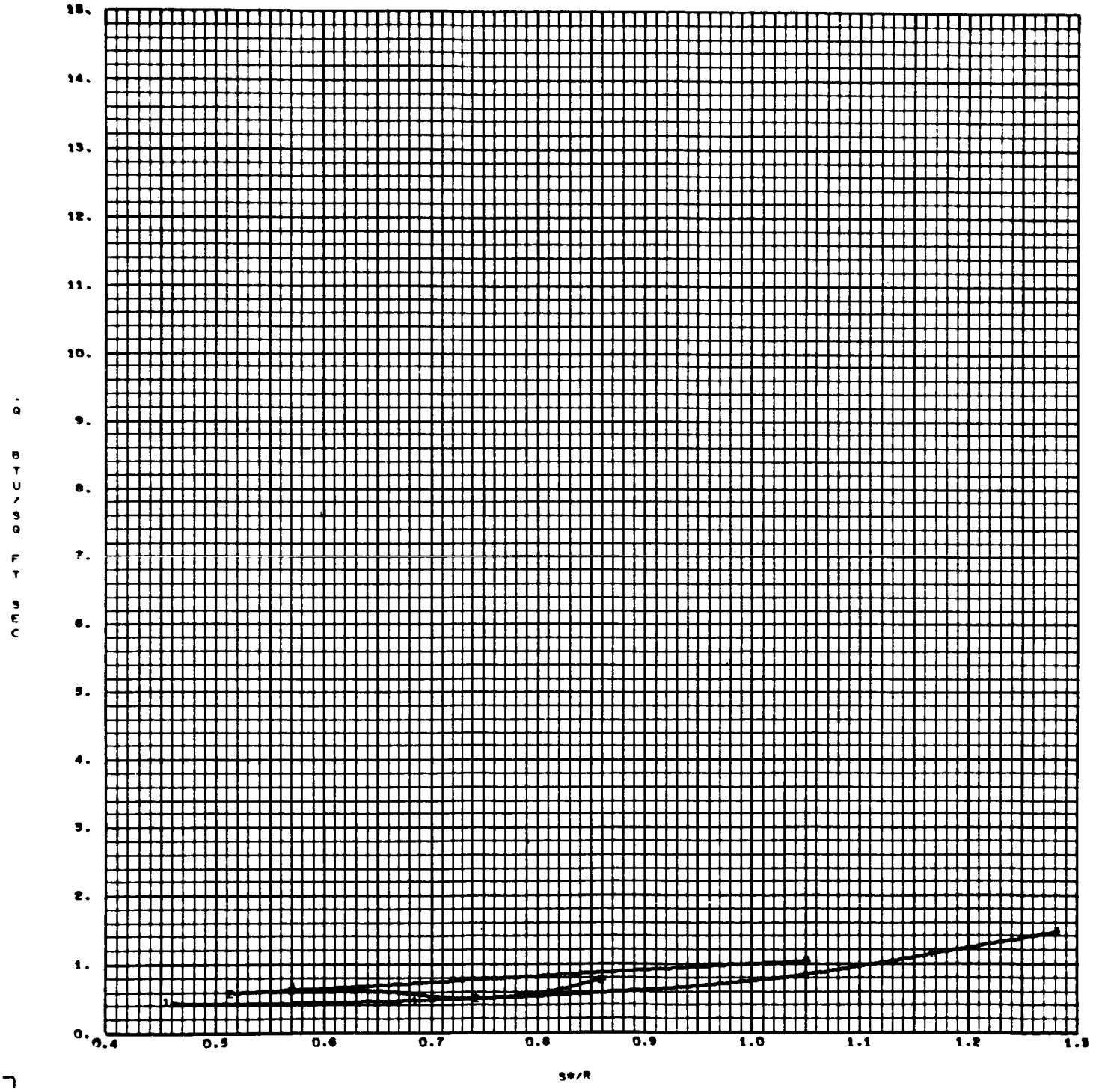
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 34
TOTAL PRESSURE 748.4 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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[redacted]

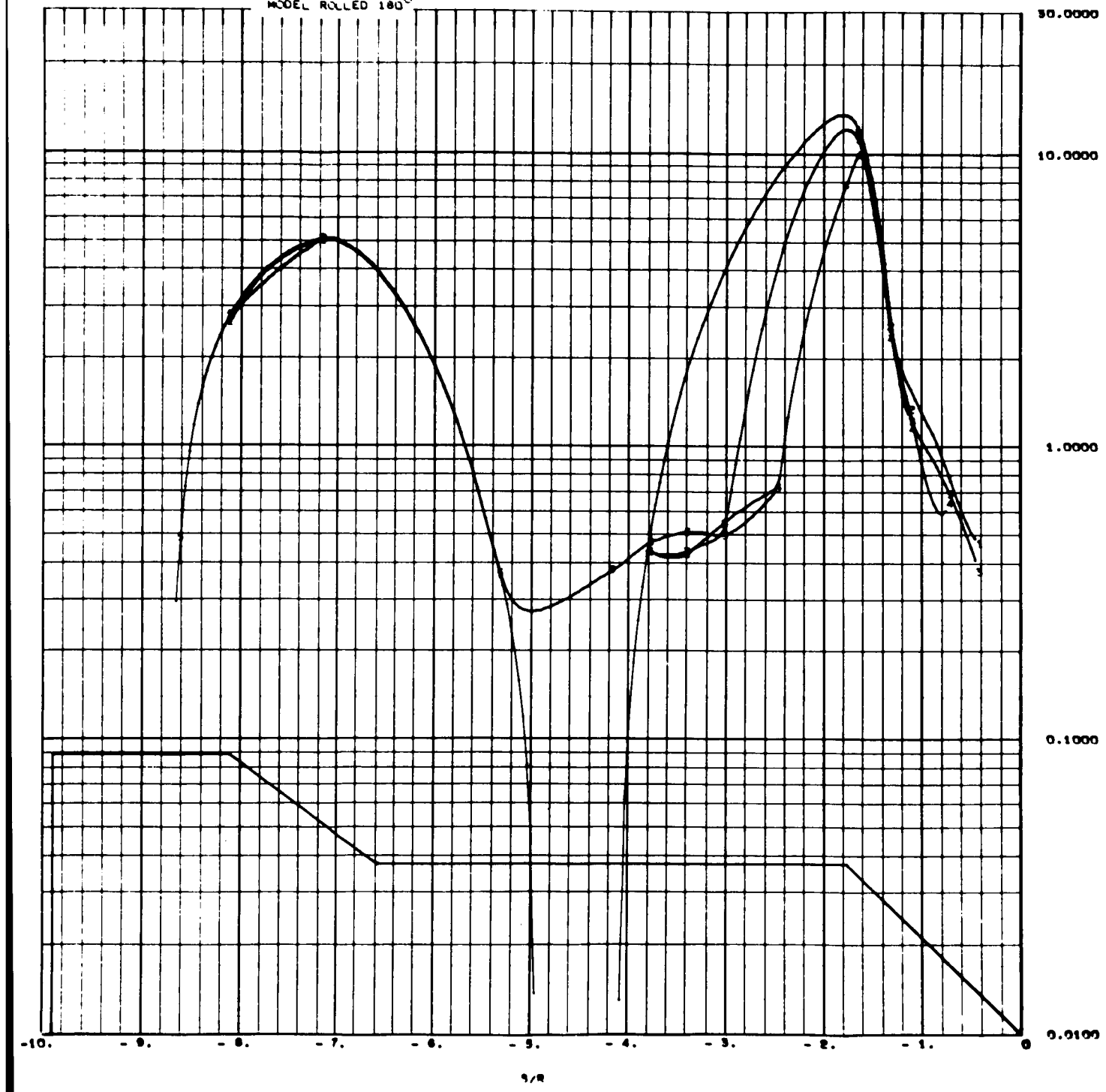
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 35
TOTAL PRESSURE 748.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
μ_0^* 0.00133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES
MODEL ROLLED 180°

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

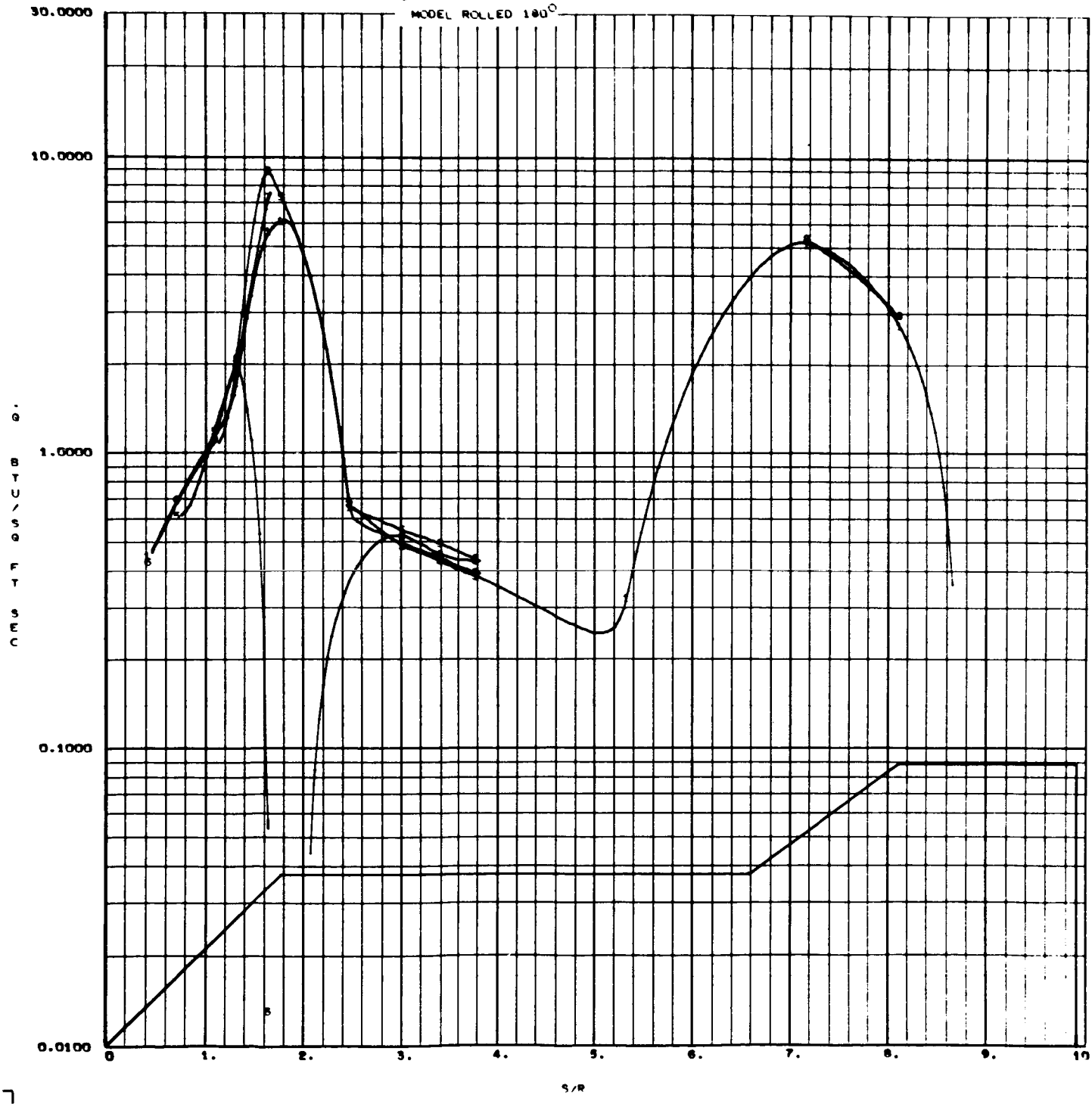
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 35
TOTAL PRESSURE 748.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.0133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES
MODEL ROLLED 180°

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

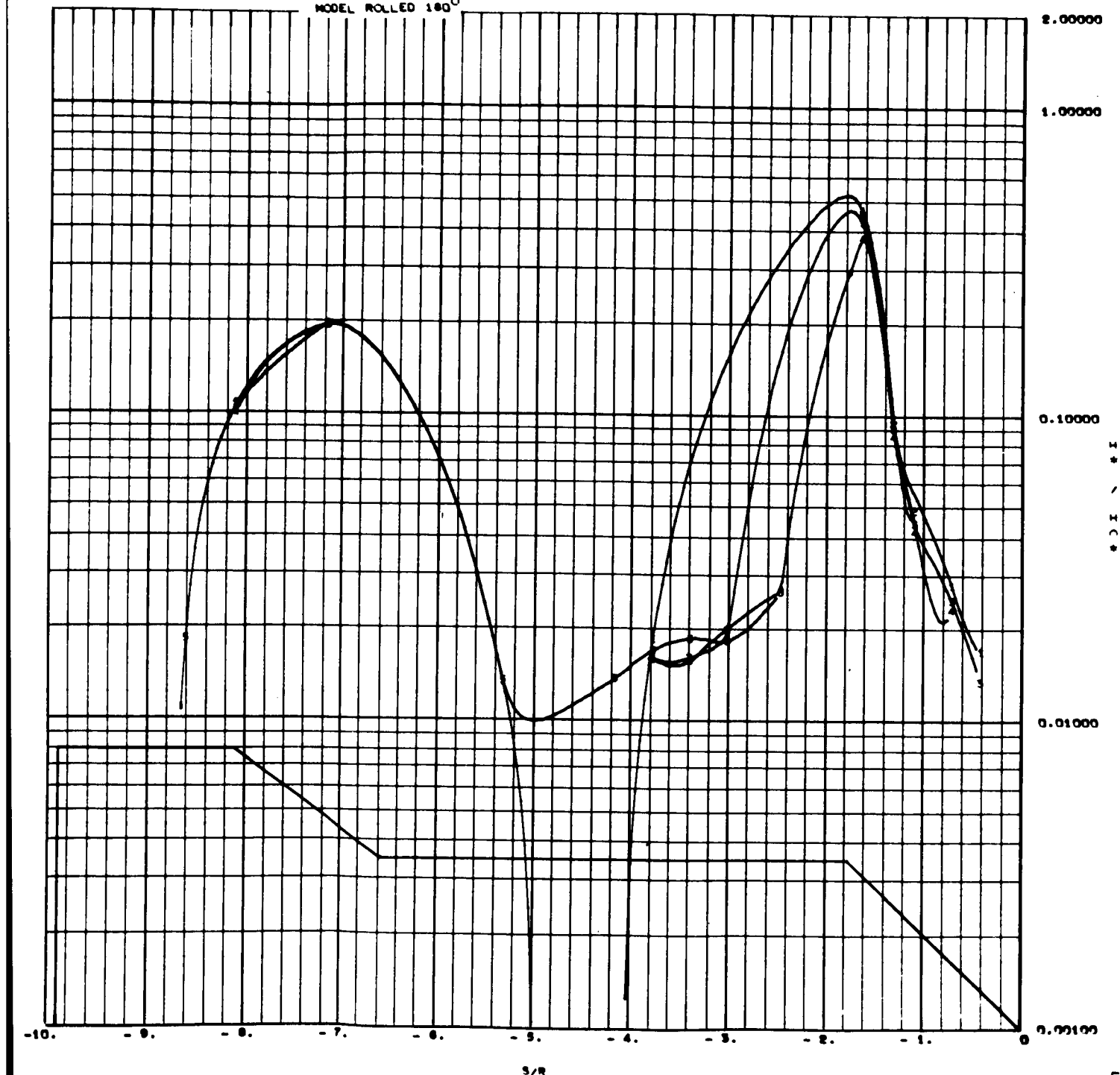
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.15
GROUP NO. 35
TOTAL PRESSURE 748.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES
MODEL ROLLED 180°

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

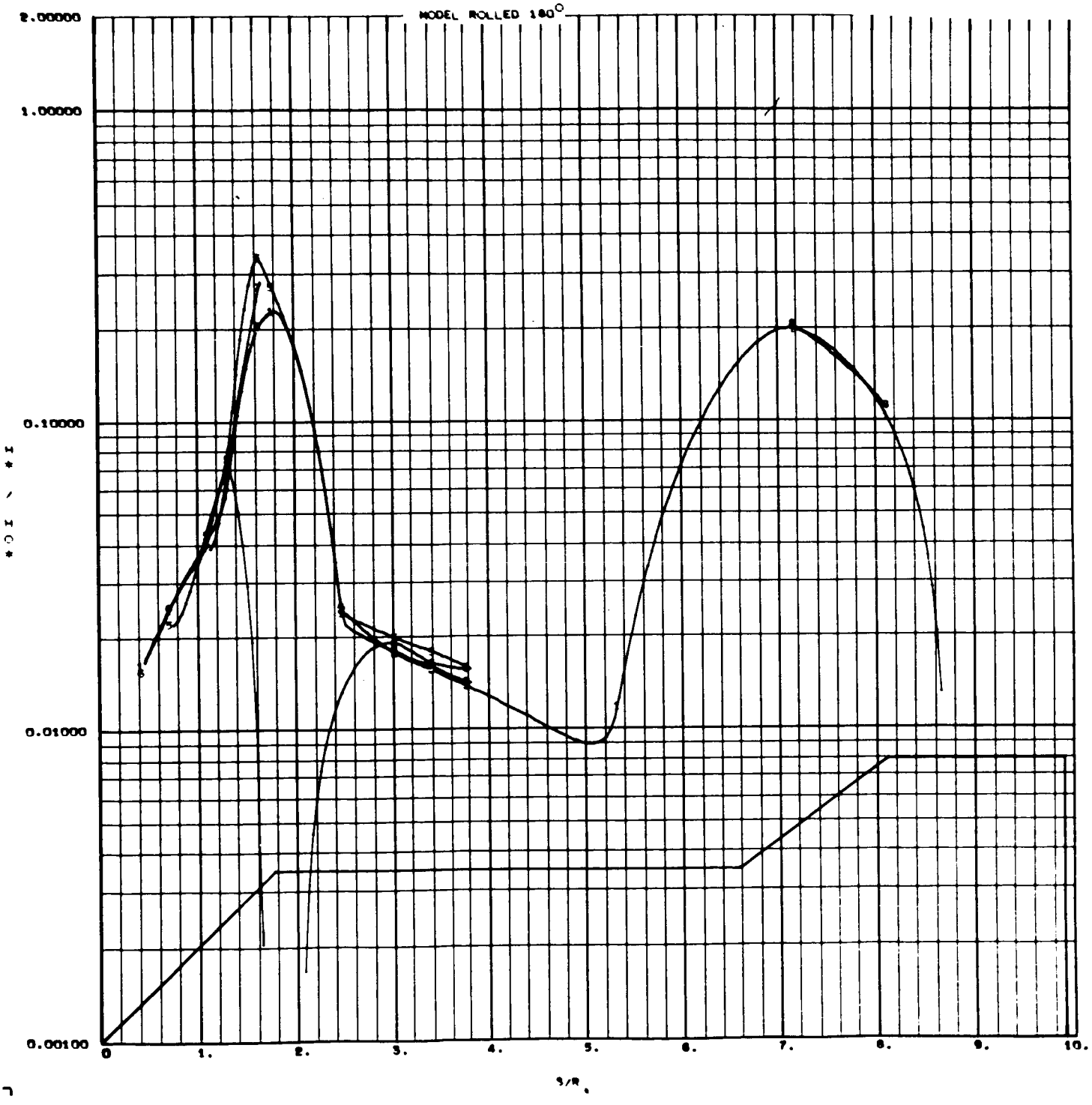
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 35
TOTAL PRESSURE 748.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES
MODEL ROLLED 180°

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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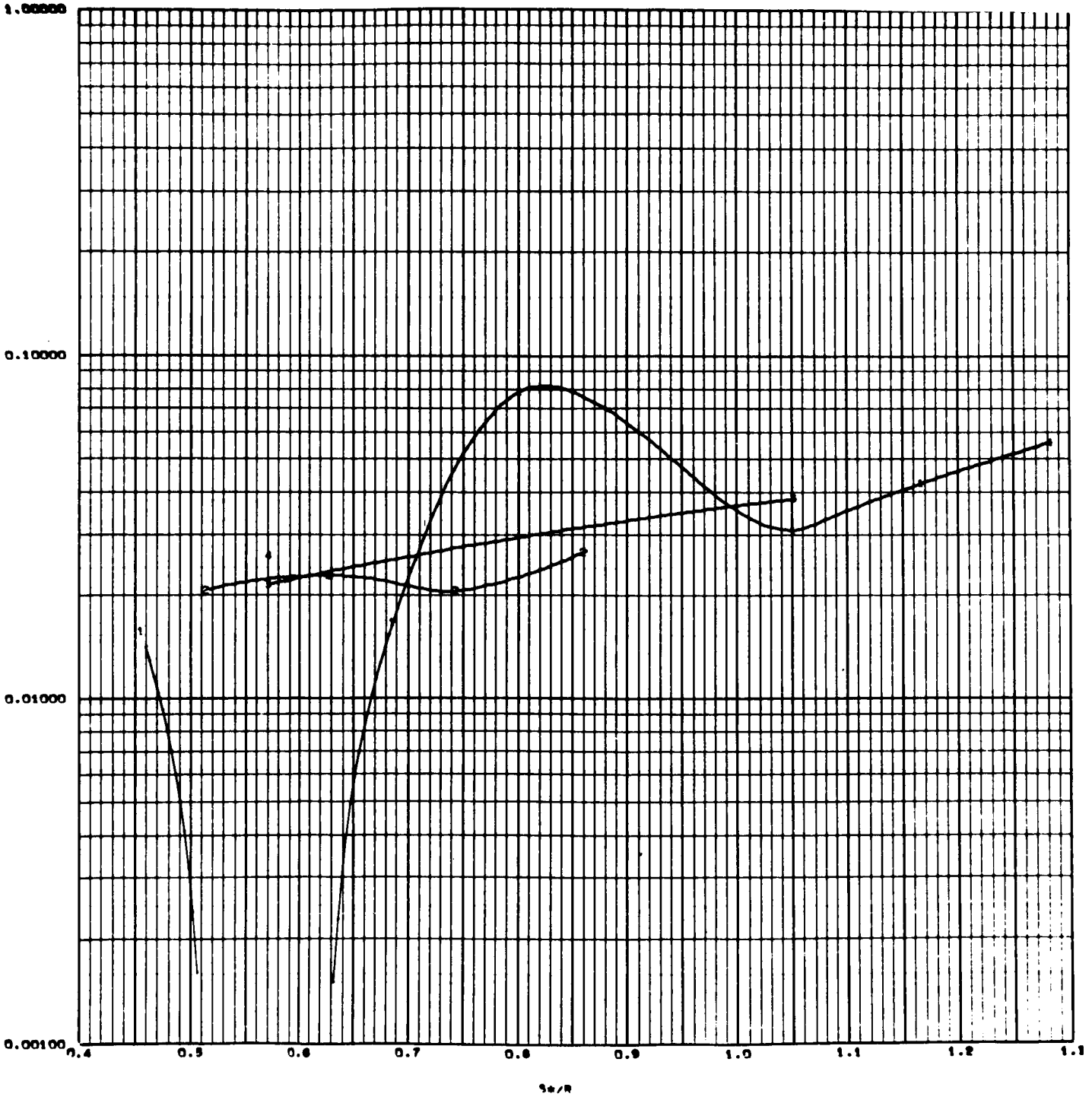
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 35
TOTAL PRESSURE 748.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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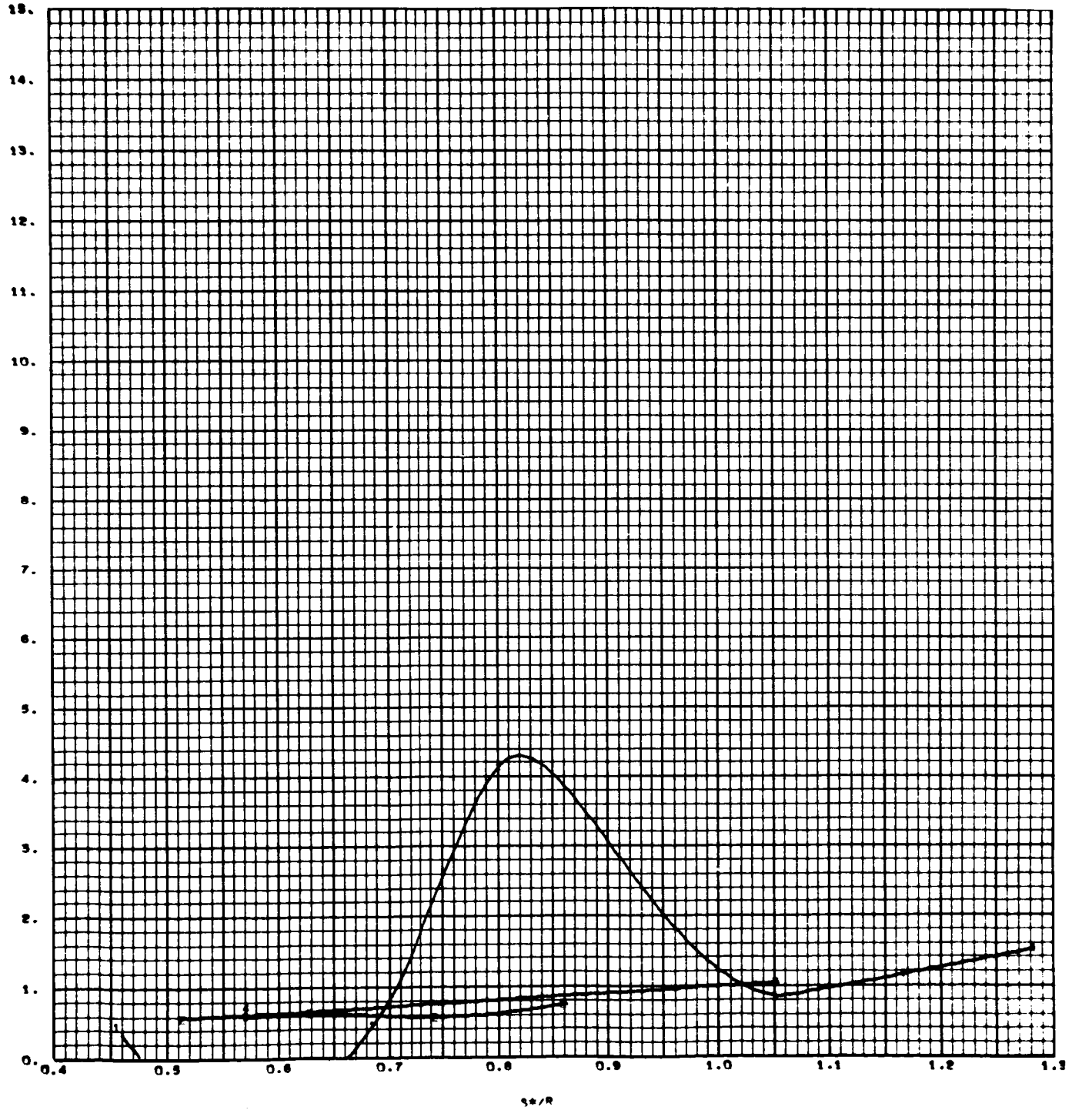
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 35
TOTAL PRESSURE 748.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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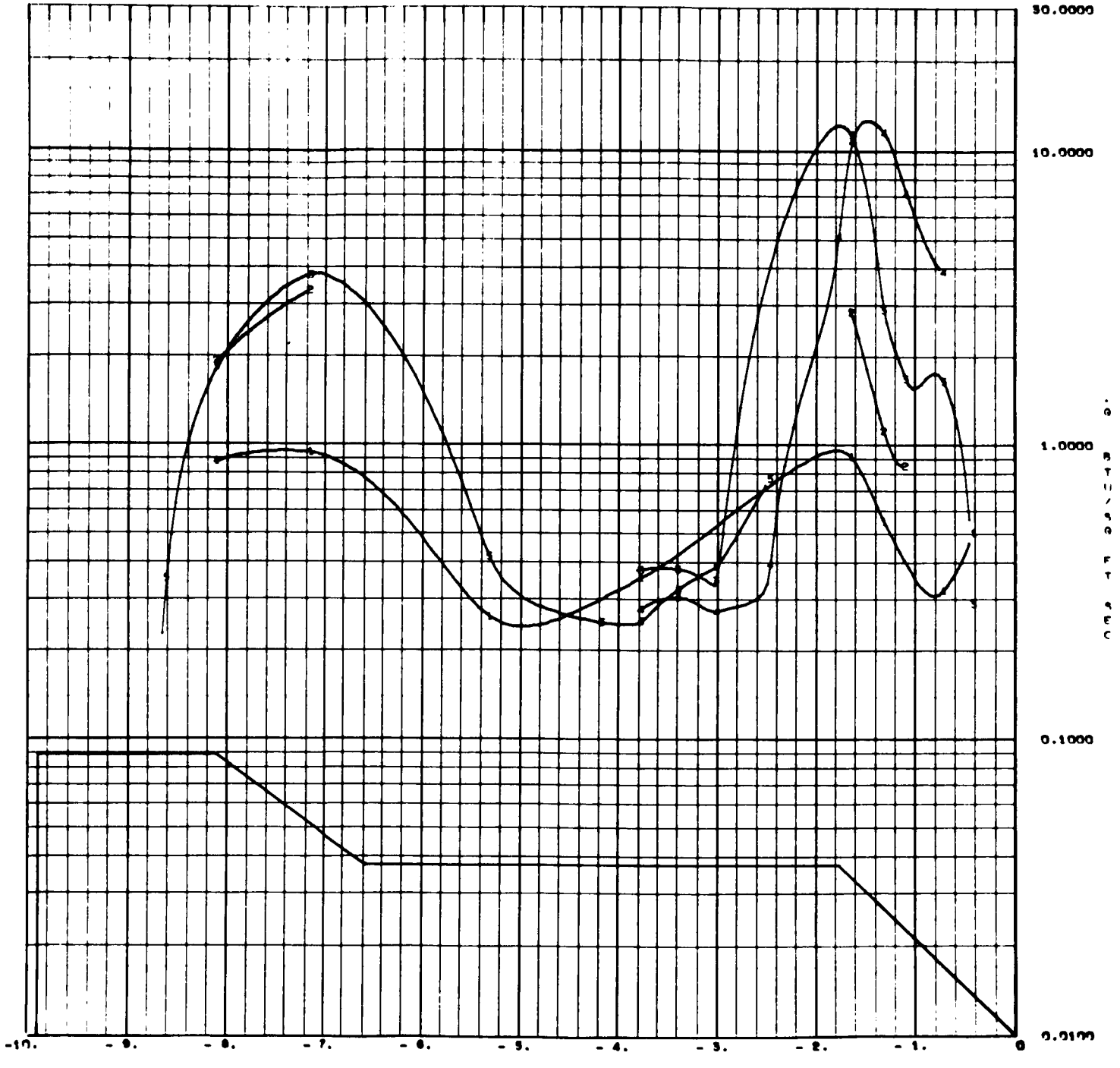
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 31
TOTAL PRESSURE 748.7 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.40 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

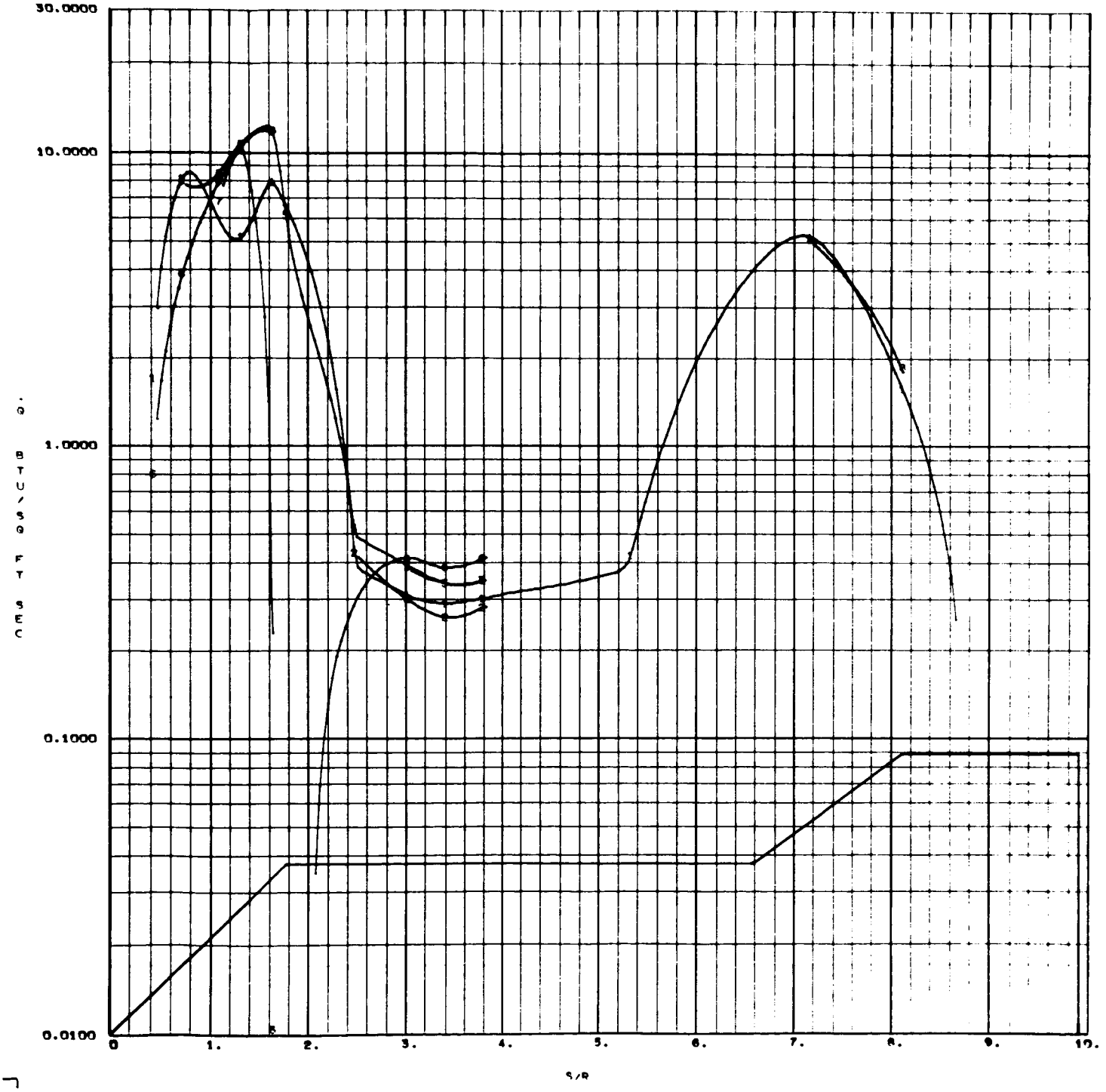
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 31
TOTAL PRESSURE 748.7 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.40 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

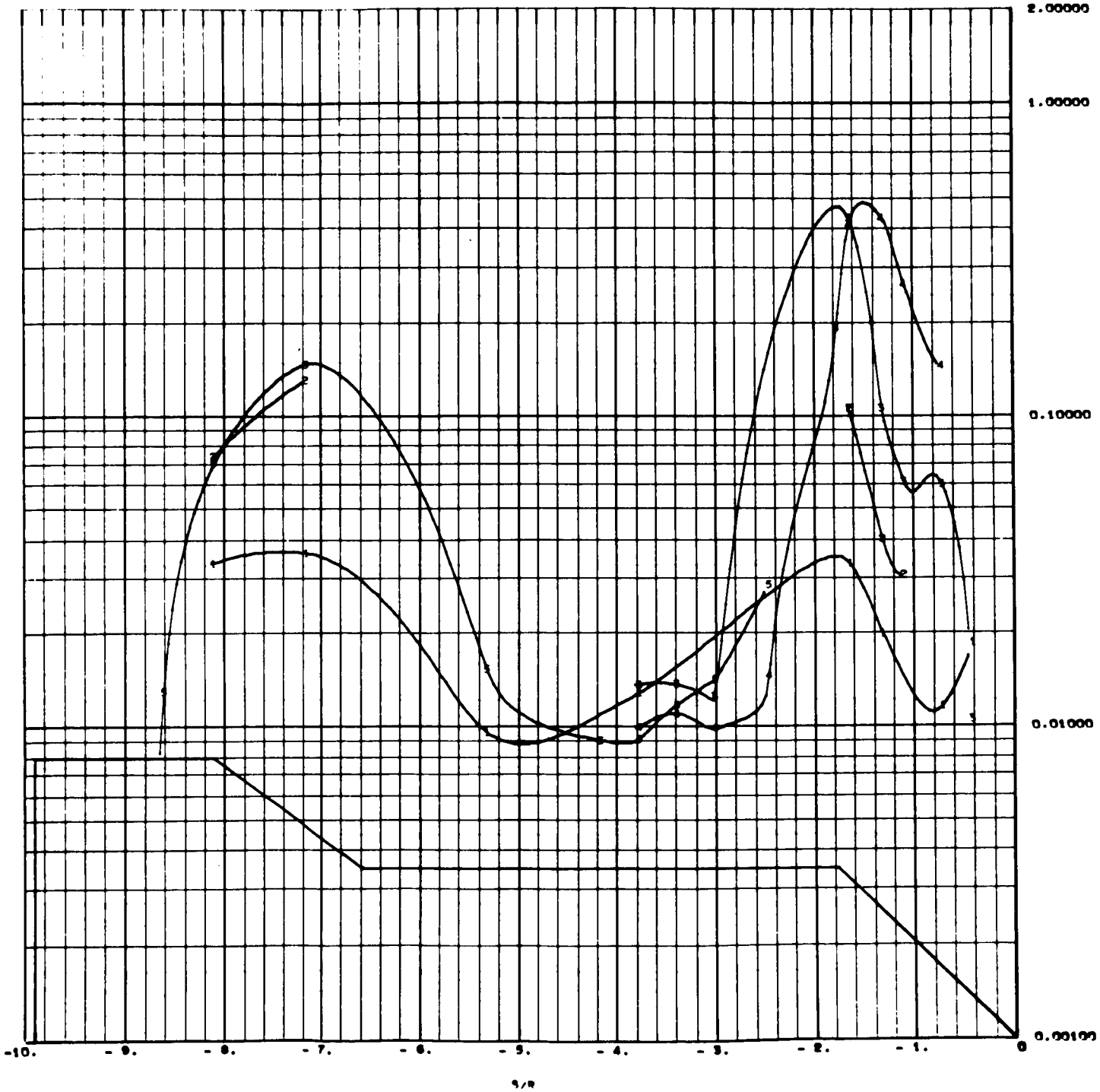
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 31
TOTAL PRESSURE 748.7 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.40 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

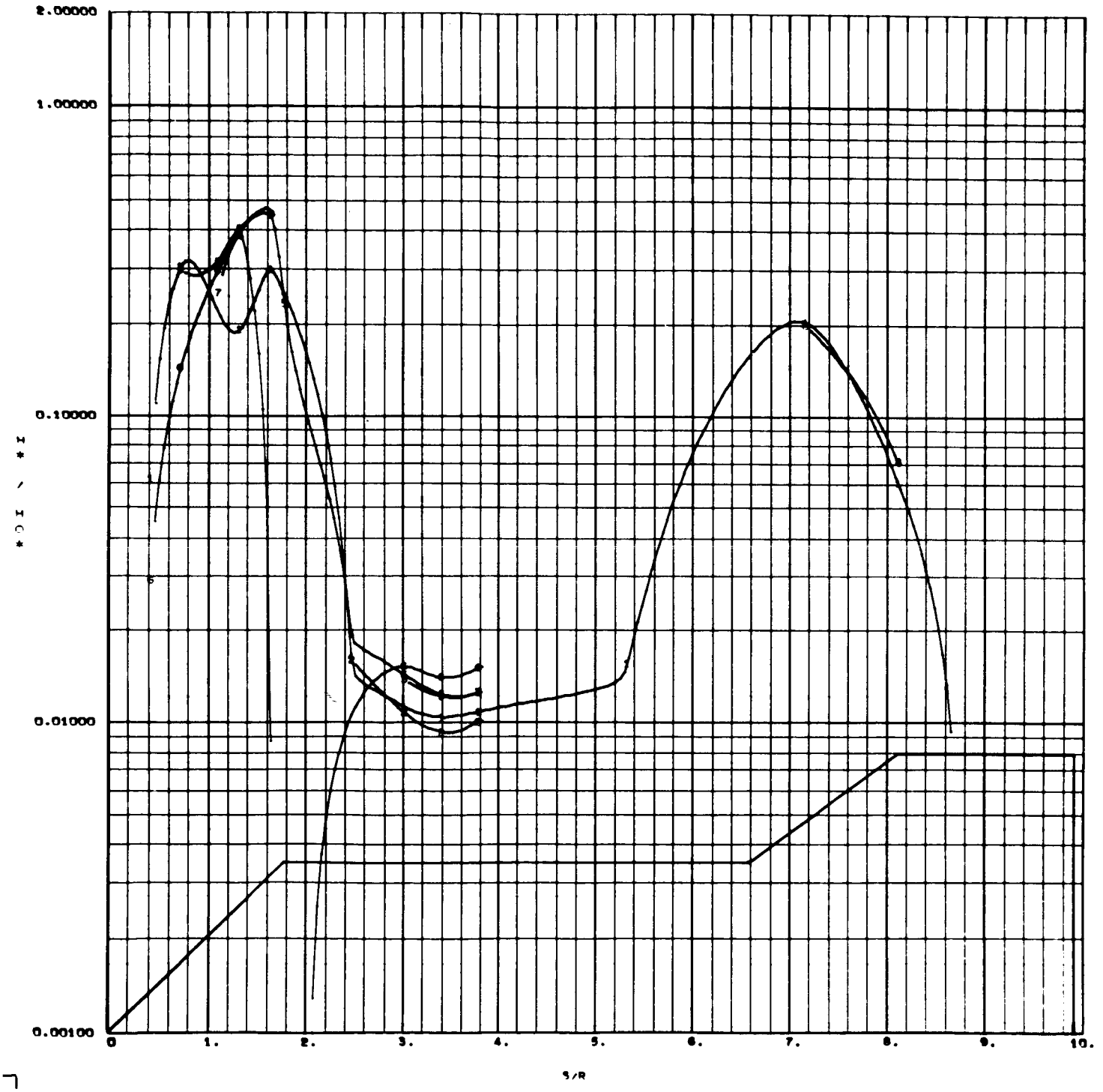
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 31
TOTAL PRESSURE 748.7 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_C^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.40 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

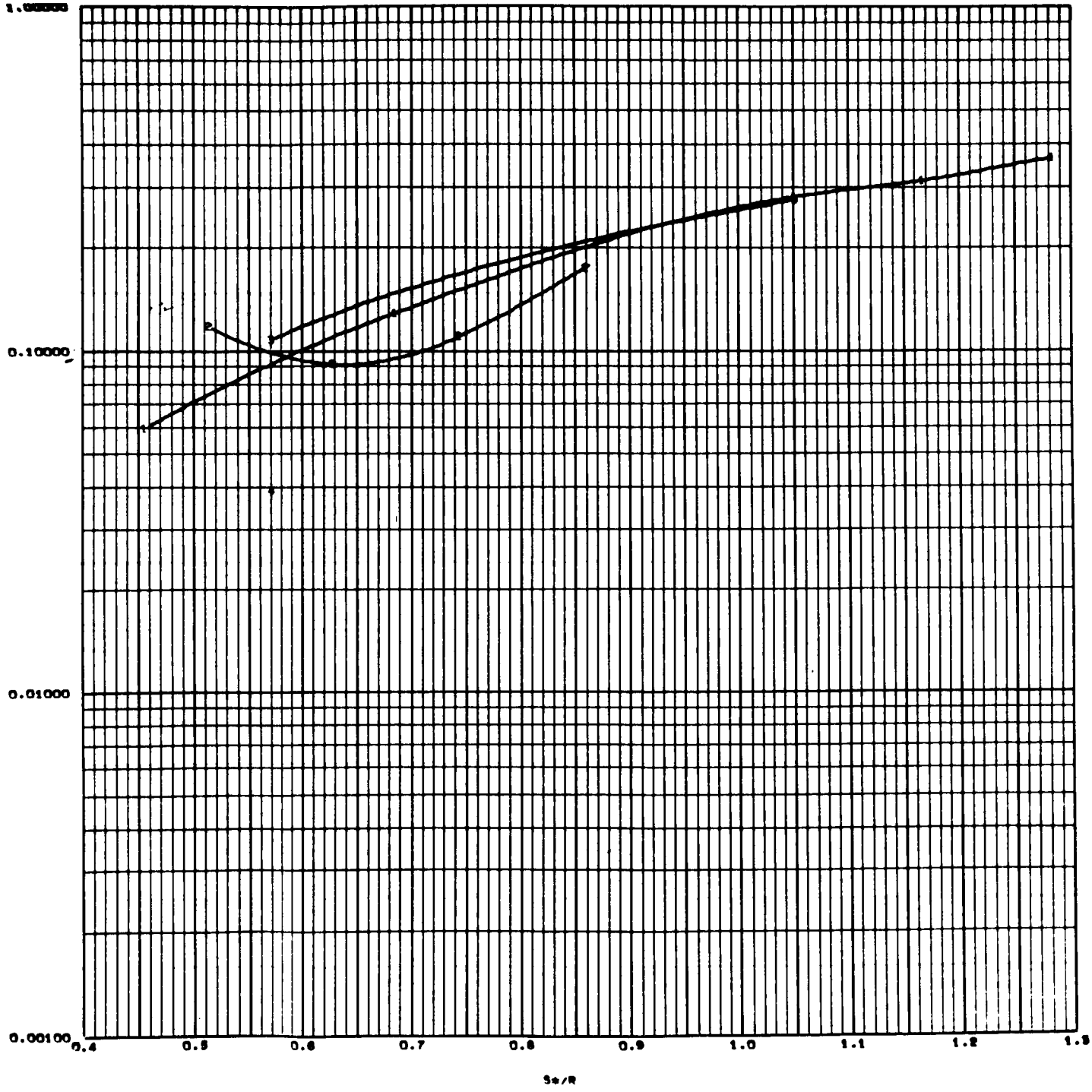
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.15
GROUP NO. 31
TOTAL PRESSURE 748.7 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.40 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

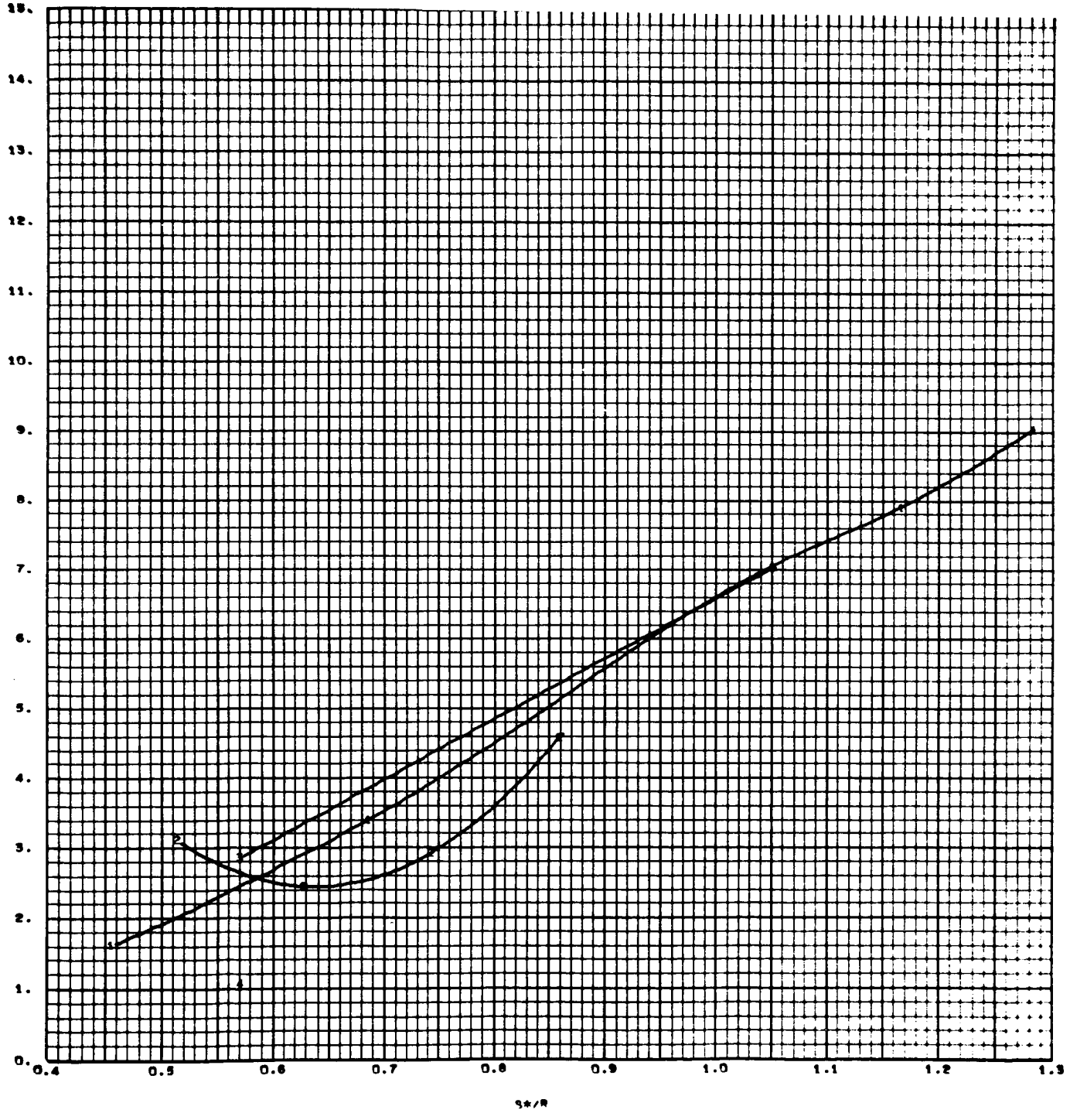
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 31
TOTAL PRESSURE 748.7 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.40 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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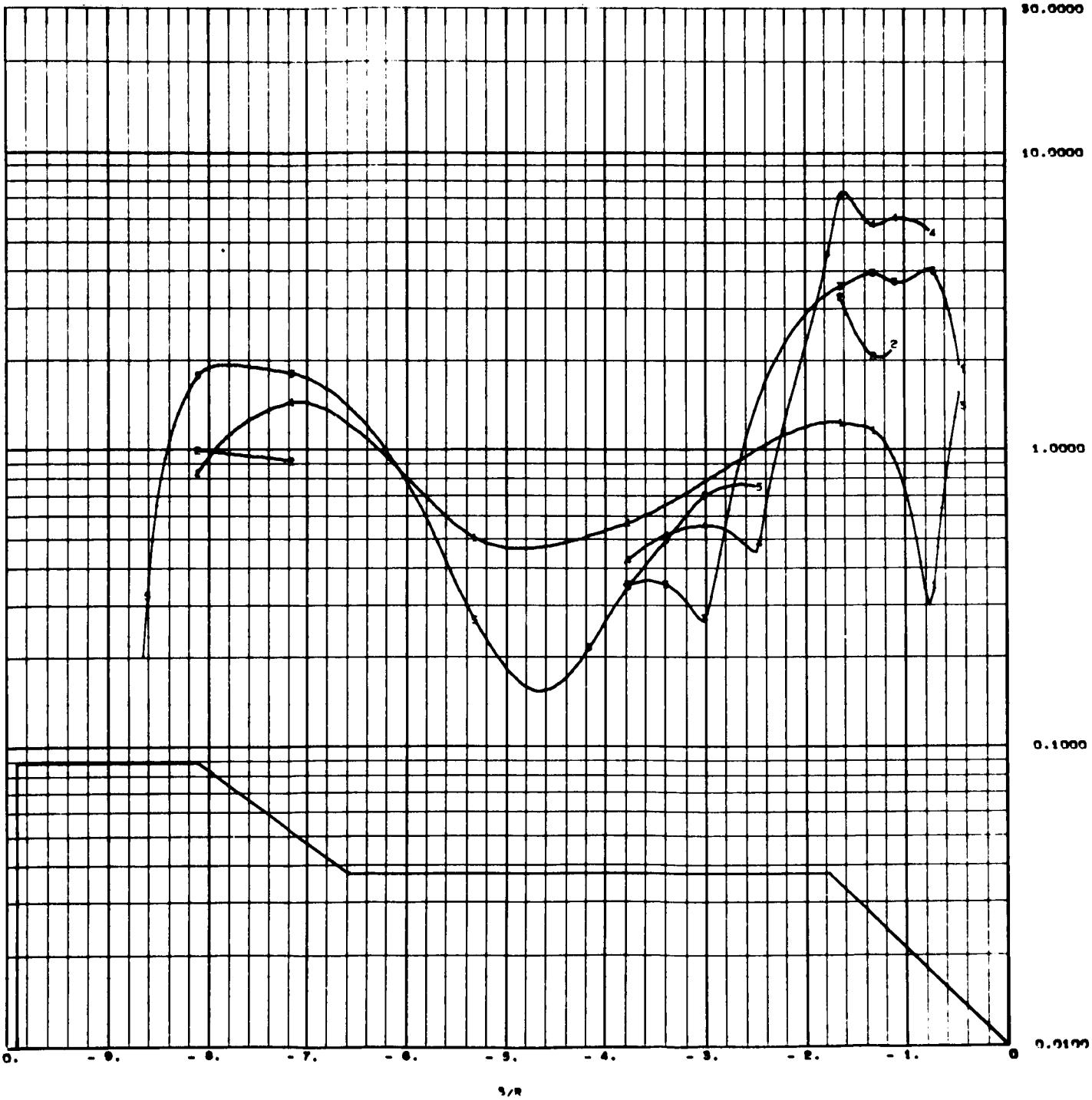
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 32
TOTAL PRESSURE 750.7 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1784.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

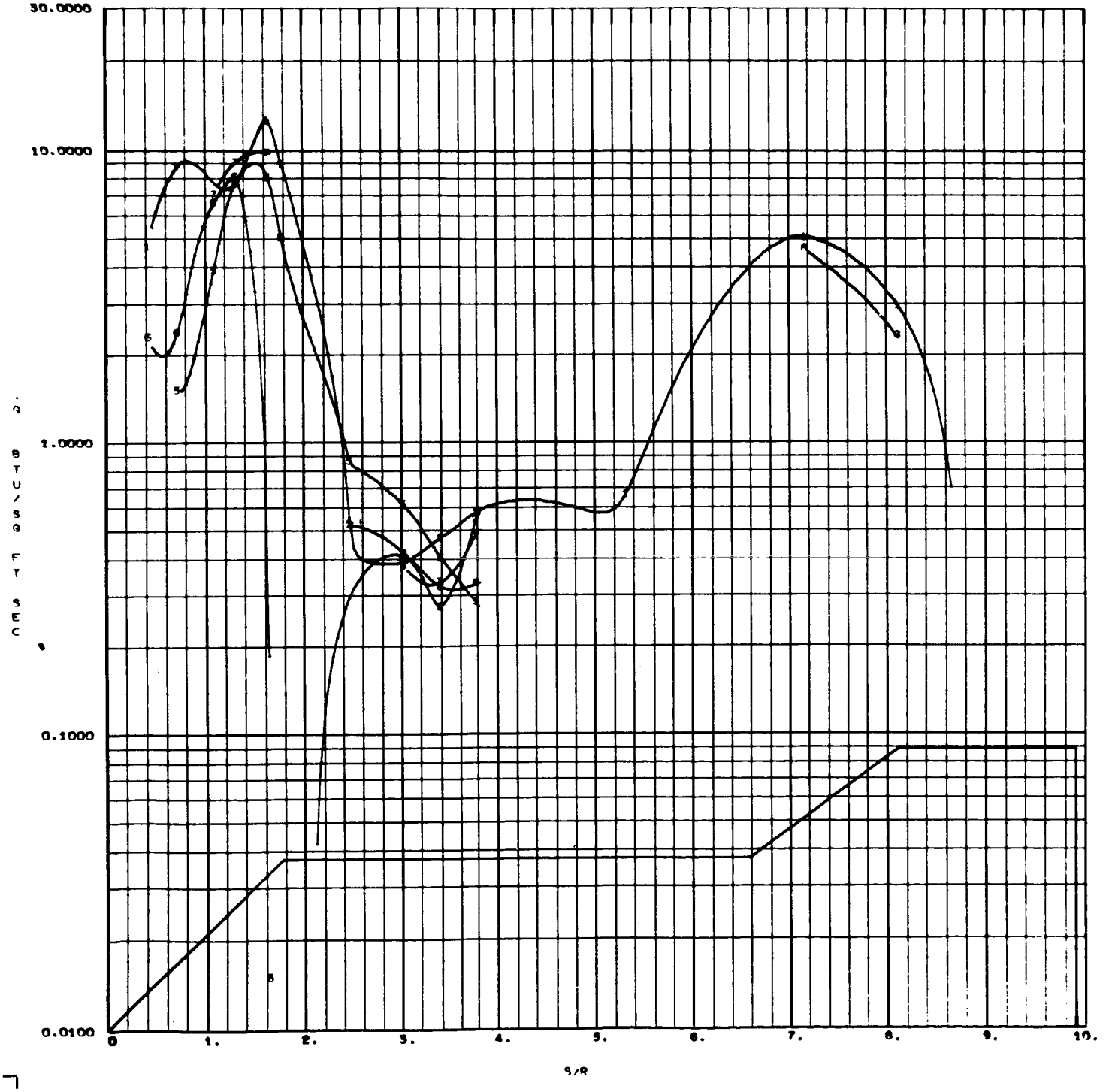
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 32
TOTAL PRESSURE 750.7 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1784.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

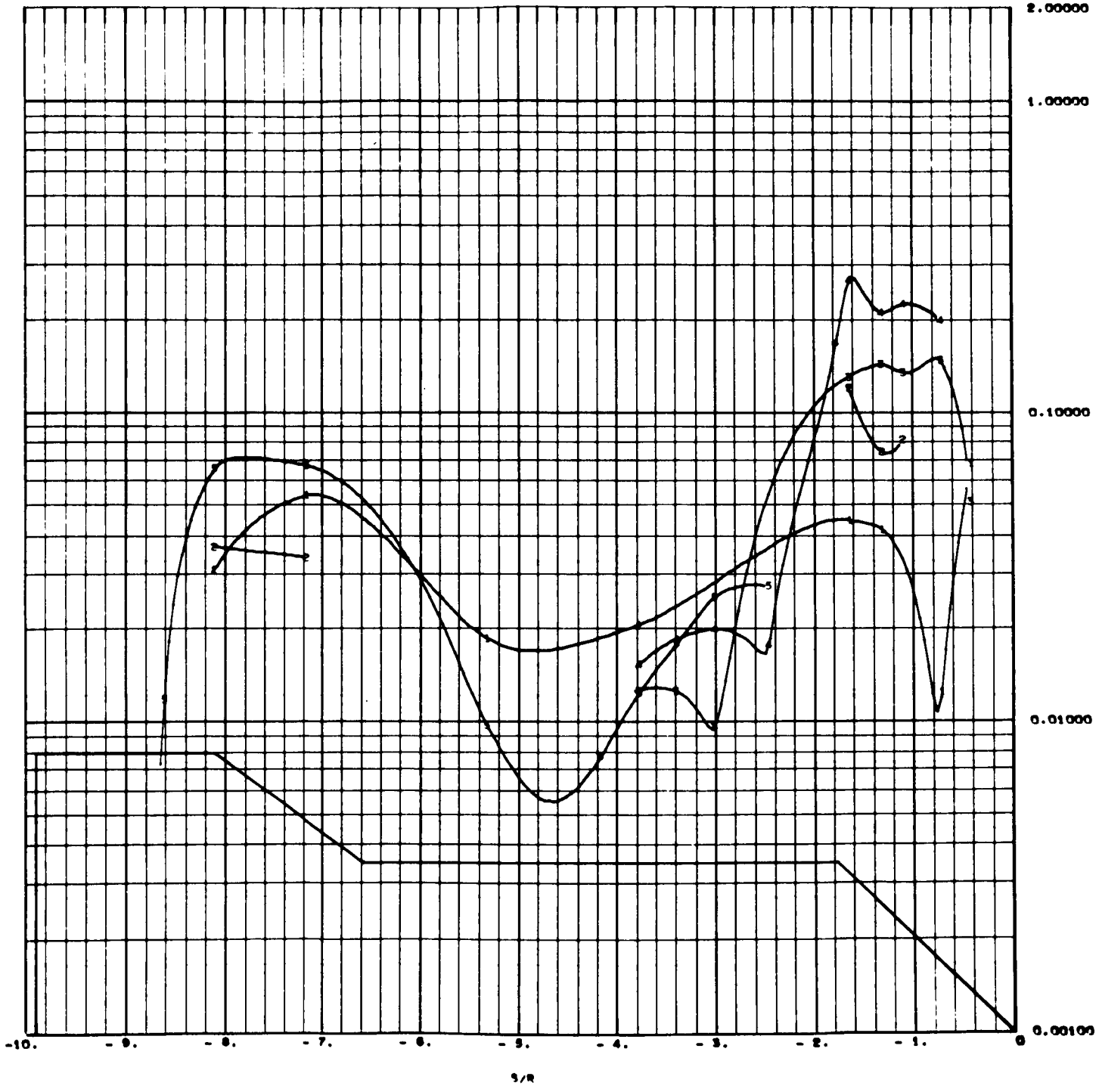
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 32
TOTAL PRESSURE 750.7 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_o* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1784.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

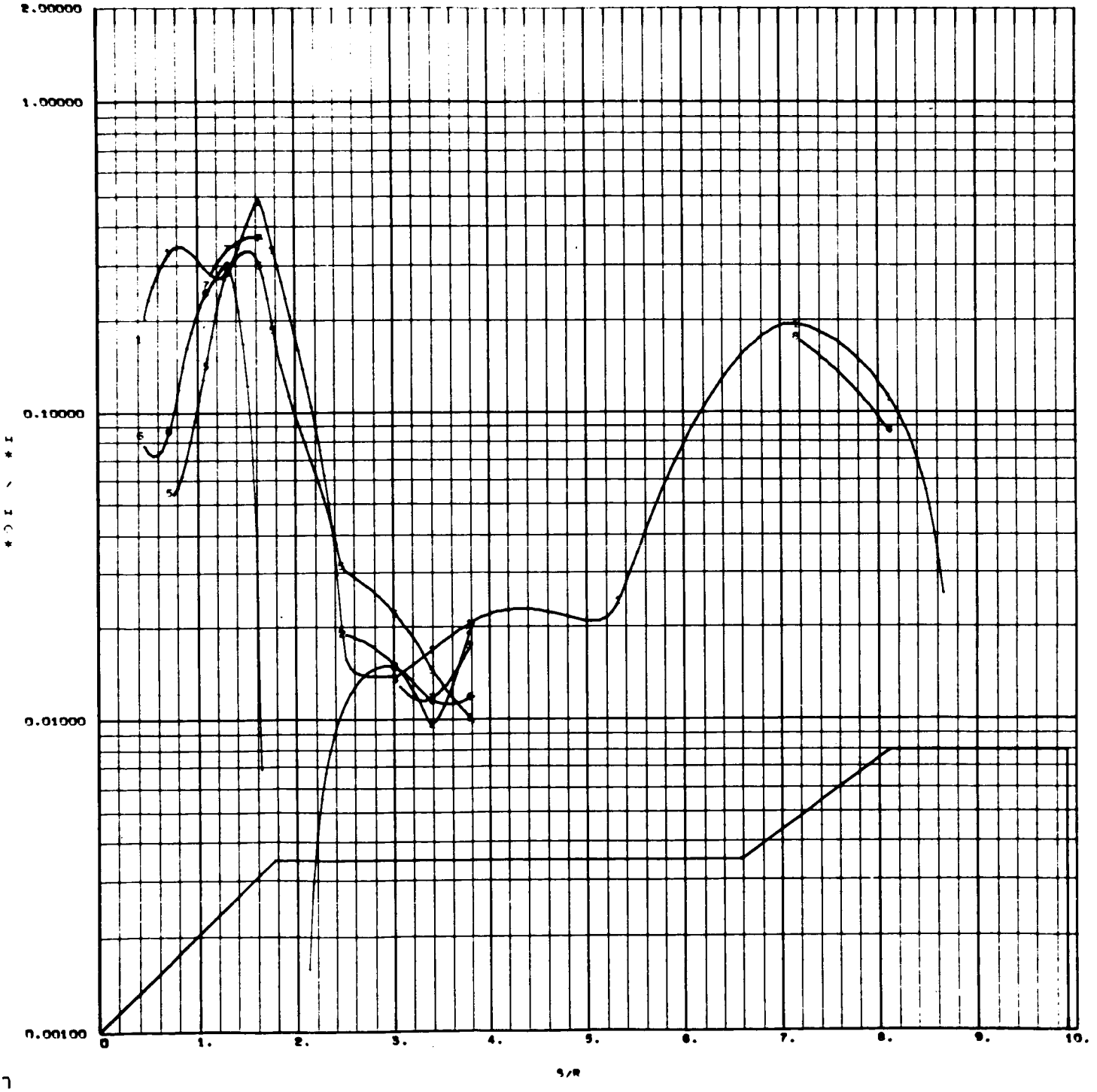
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 32
TOTAL PRESSURE 750.7 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1784.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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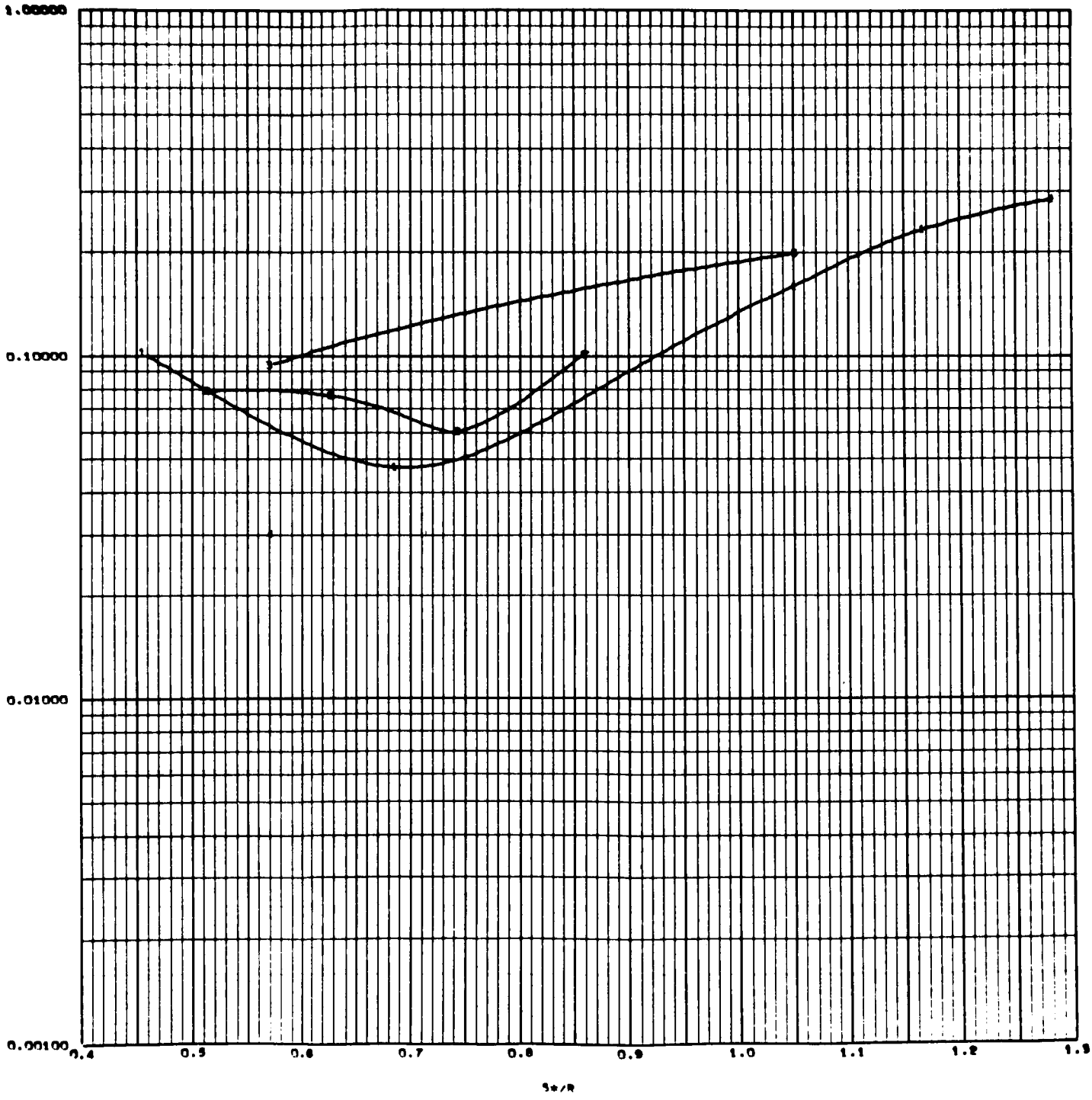
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 32
TOTAL PRESSURE 750.7 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1784.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 32
TOTAL PRESSURE 750.7 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1784.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

[redacted]

[redacted]

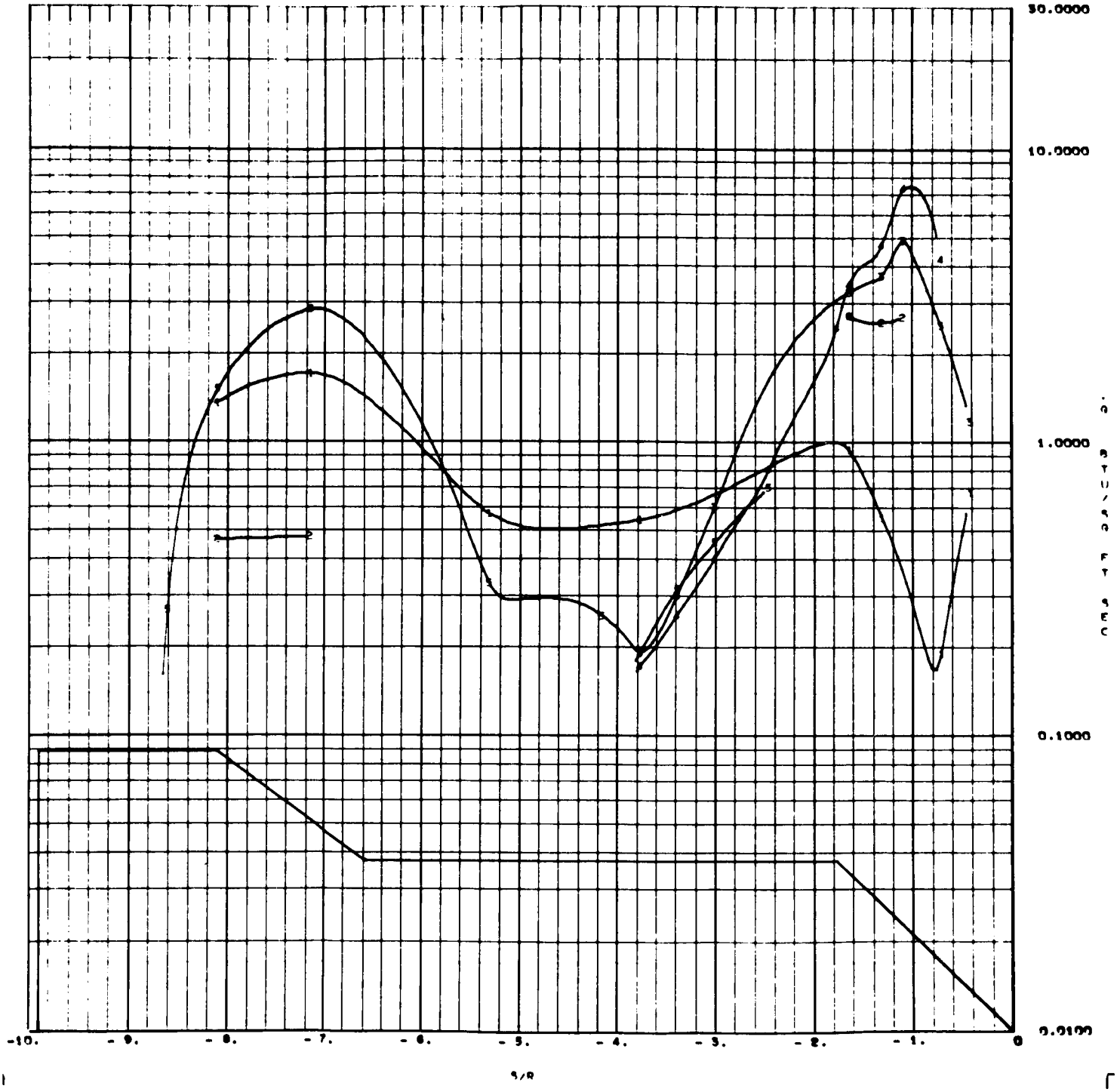
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 33
TOTAL PRESSURE 749.7 PSIA
REYNOLDS NUMBER PER INCH 0.0838 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1786.90 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

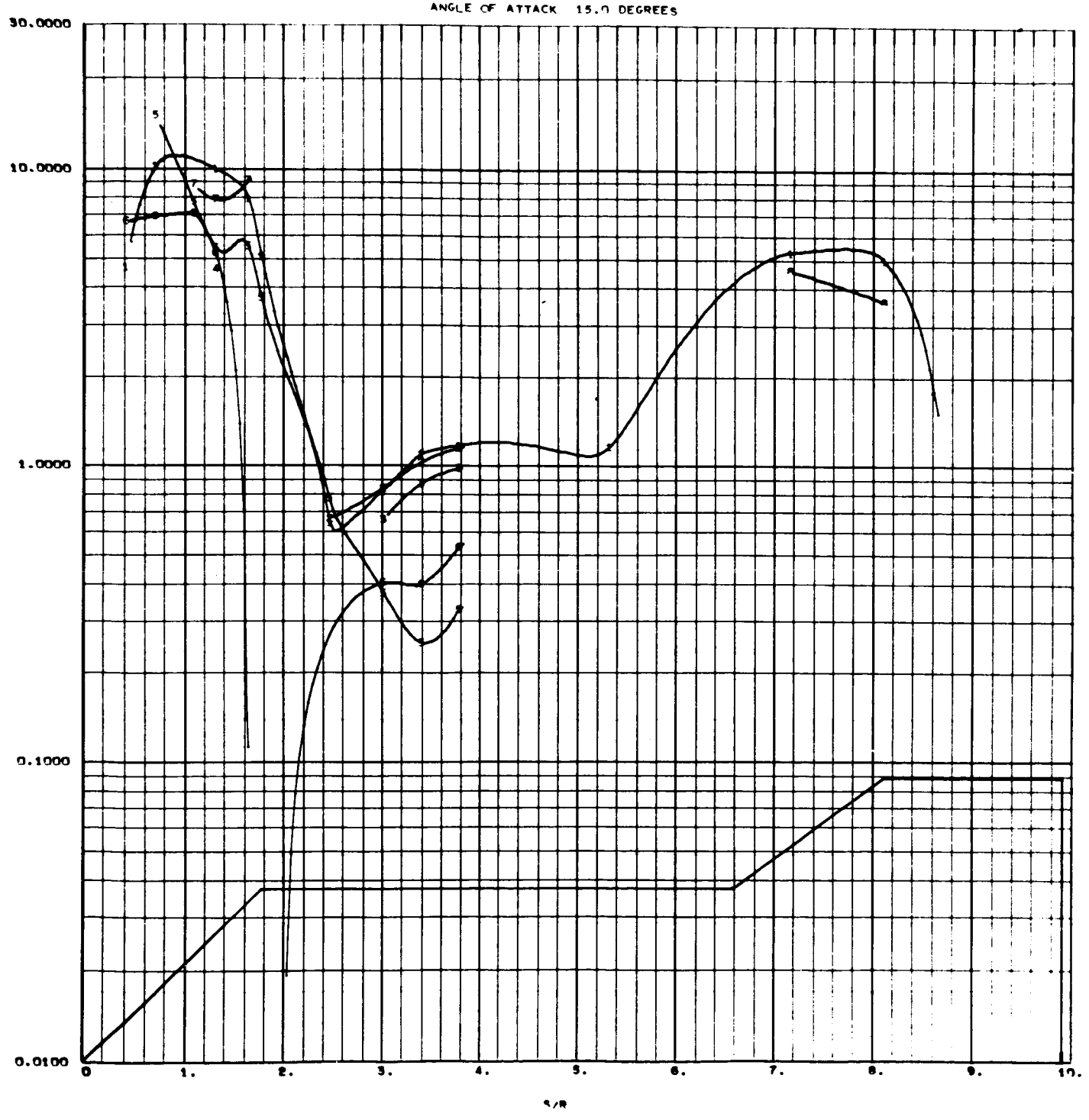
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 33
TOTAL PRESSURE 749.7 PSIA
REYNOLDS NUMBER PER INCH 0.0838 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1786.90 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

~~CONFIDENTIAL~~

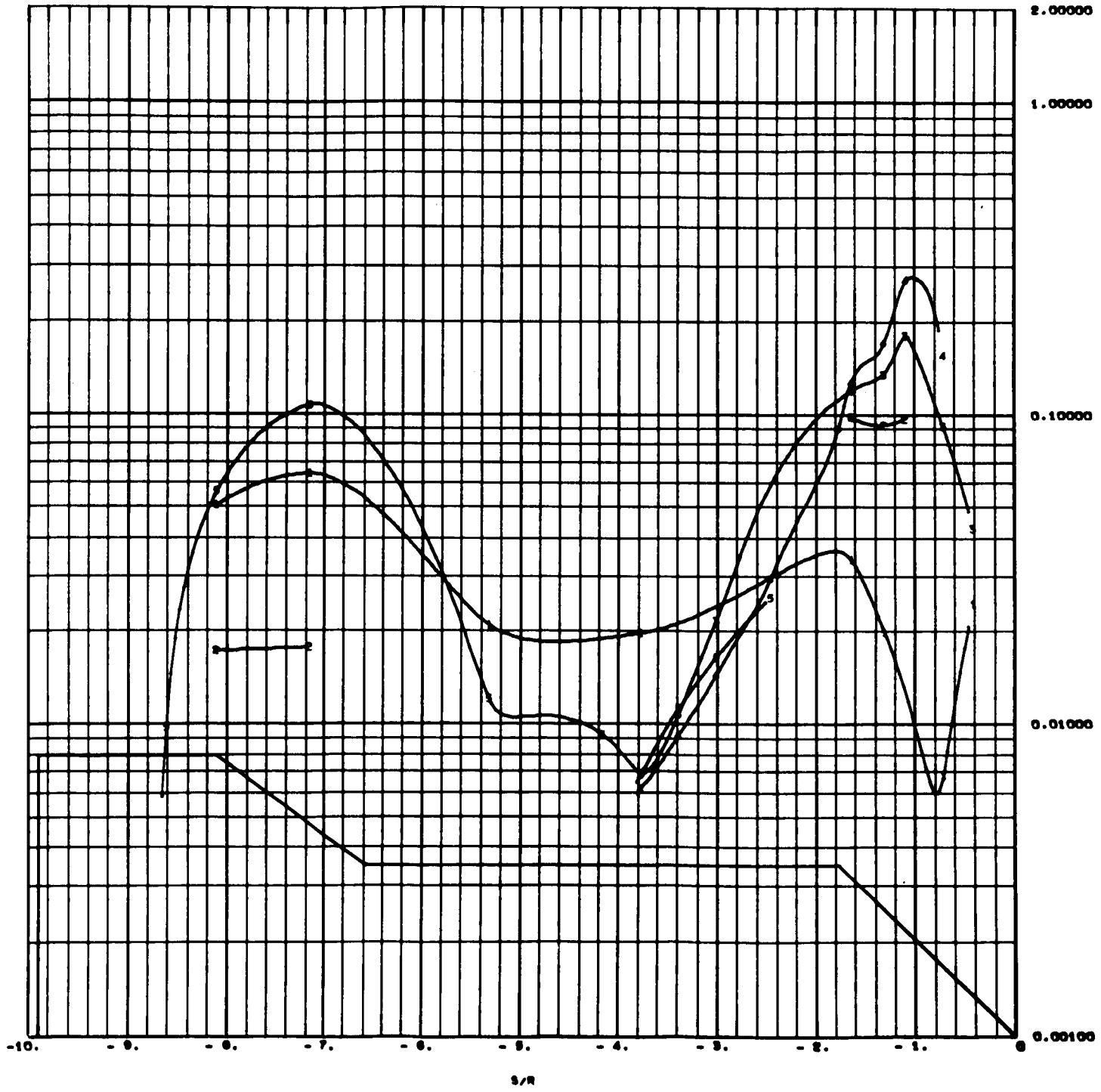
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 33
TOTAL PRESSURE 749.7 PSIA
REYNOLDS NUMBER PER INCH 0.0838 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1786.90 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



~~CONFIDENTIAL~~

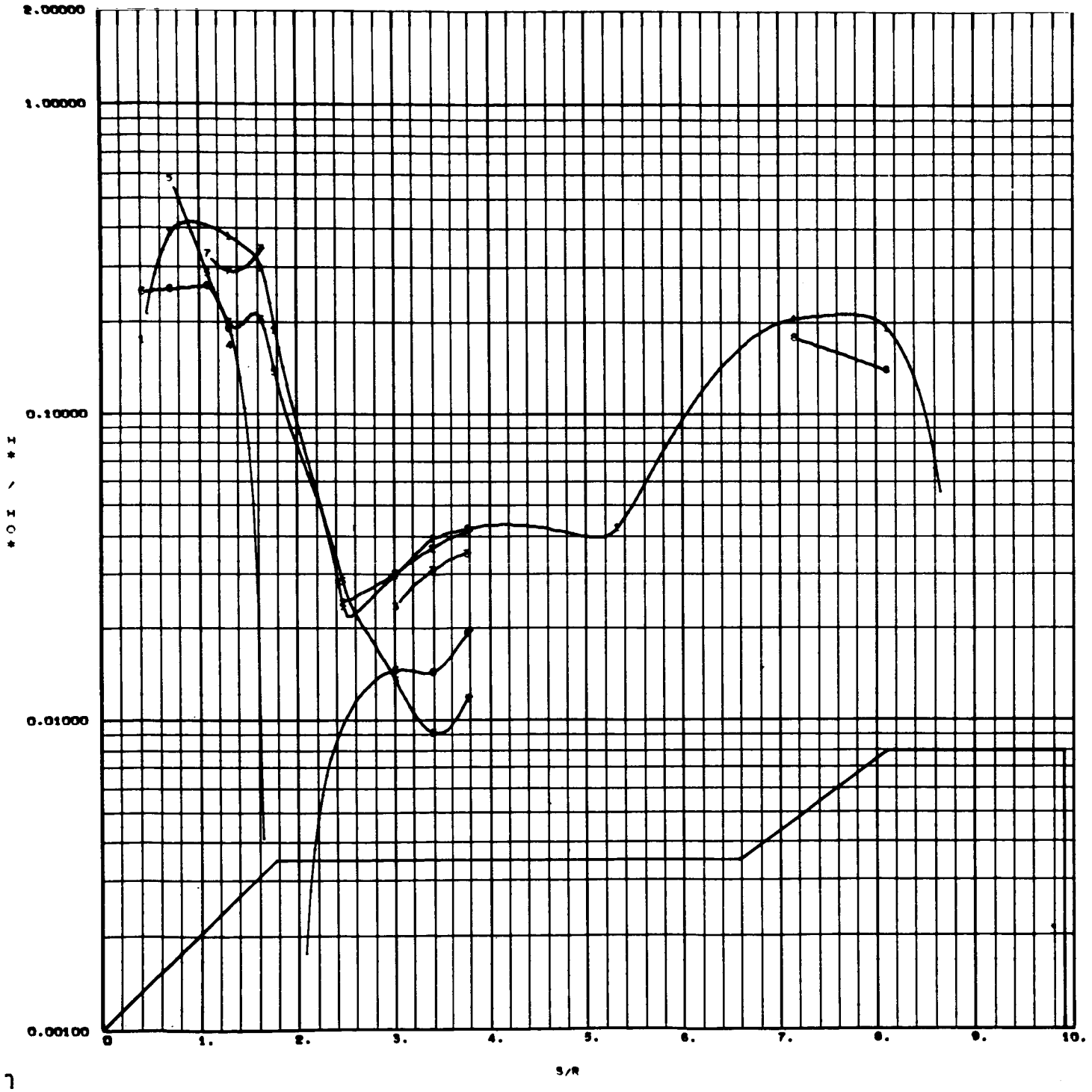
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 33
TOTAL PRESSURE 749.7 PSIA
REYNOLDS NUMBER PER INCH 0.0838 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1786.90 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

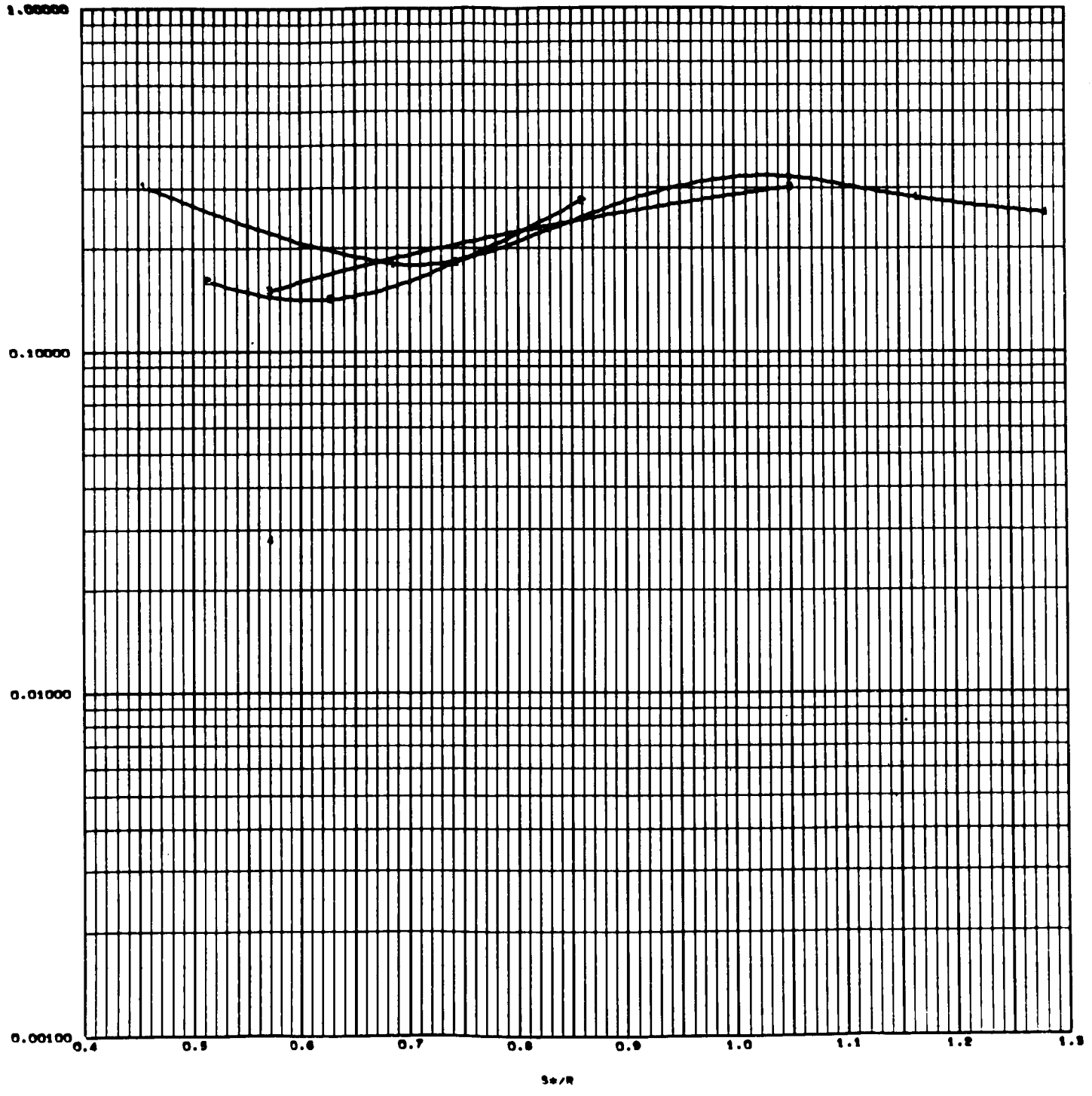
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 33
TOTAL PRESSURE 749.7 PSIA
REYNOLDS NUMBER PER INCH 0.0838 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1786.90 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.13
GROUP NO. 33
TOTAL PRESSURE 749.7 PSIA
REYNOLDS NUMBER PER INCH 0.0838 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1786.90 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

[redacted]

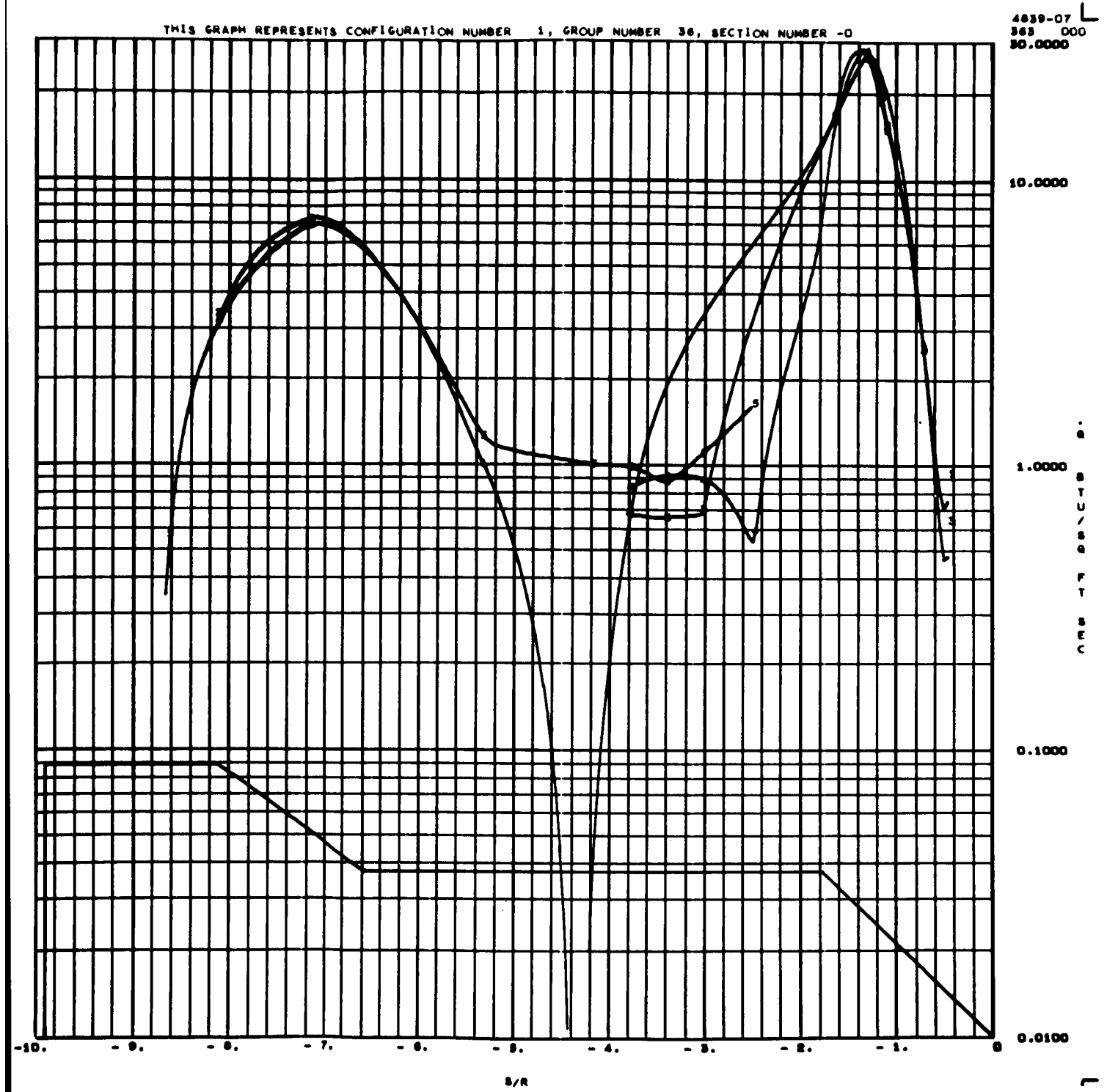
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 36
TOTAL PRESSURE 1641.5 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
M_o 0.11512 LB/FT^2 X SEC
TOTAL TEMPERATURE 1861.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

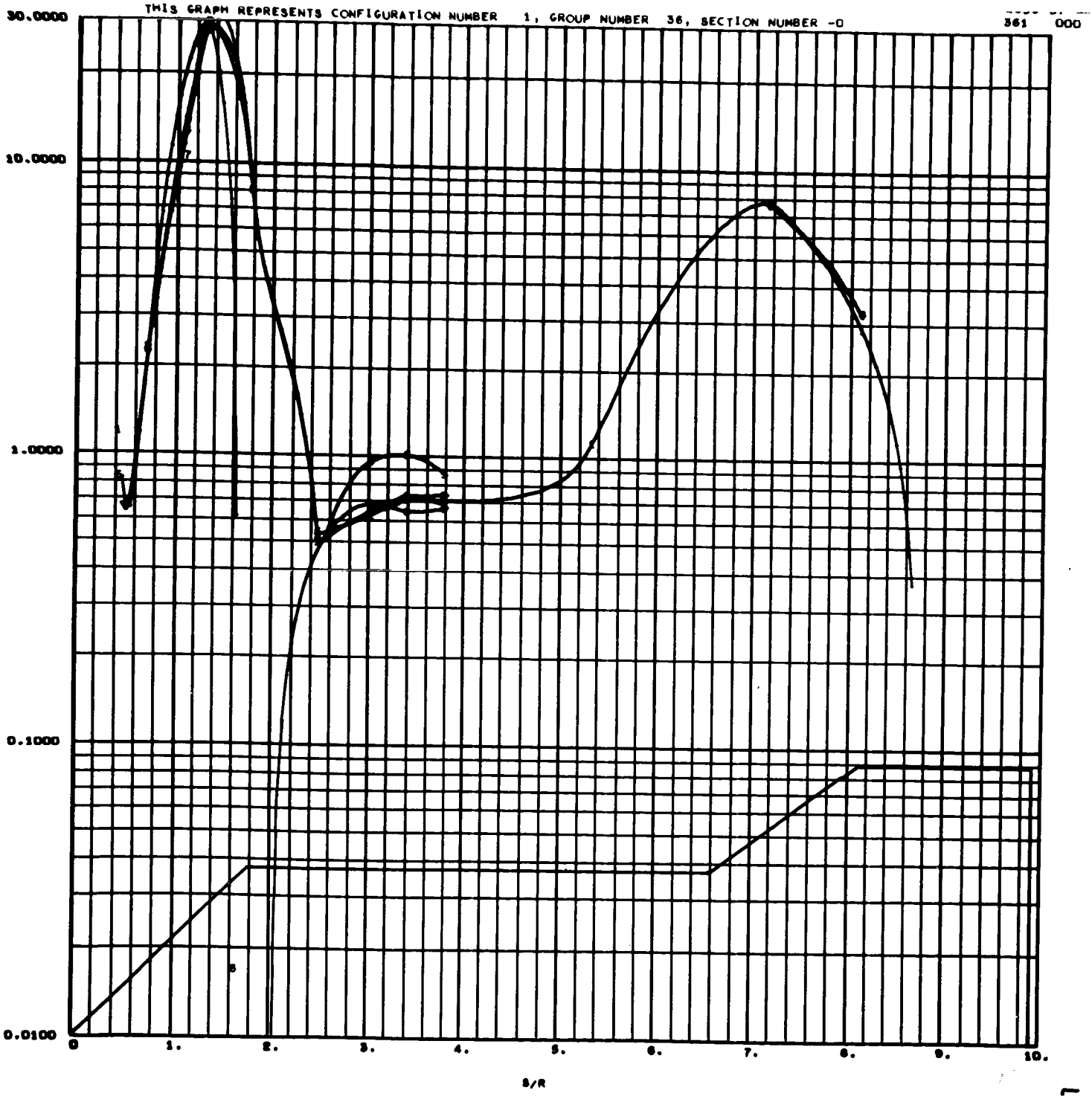
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 36
TOTAL PRESSURE 1641.5 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1861.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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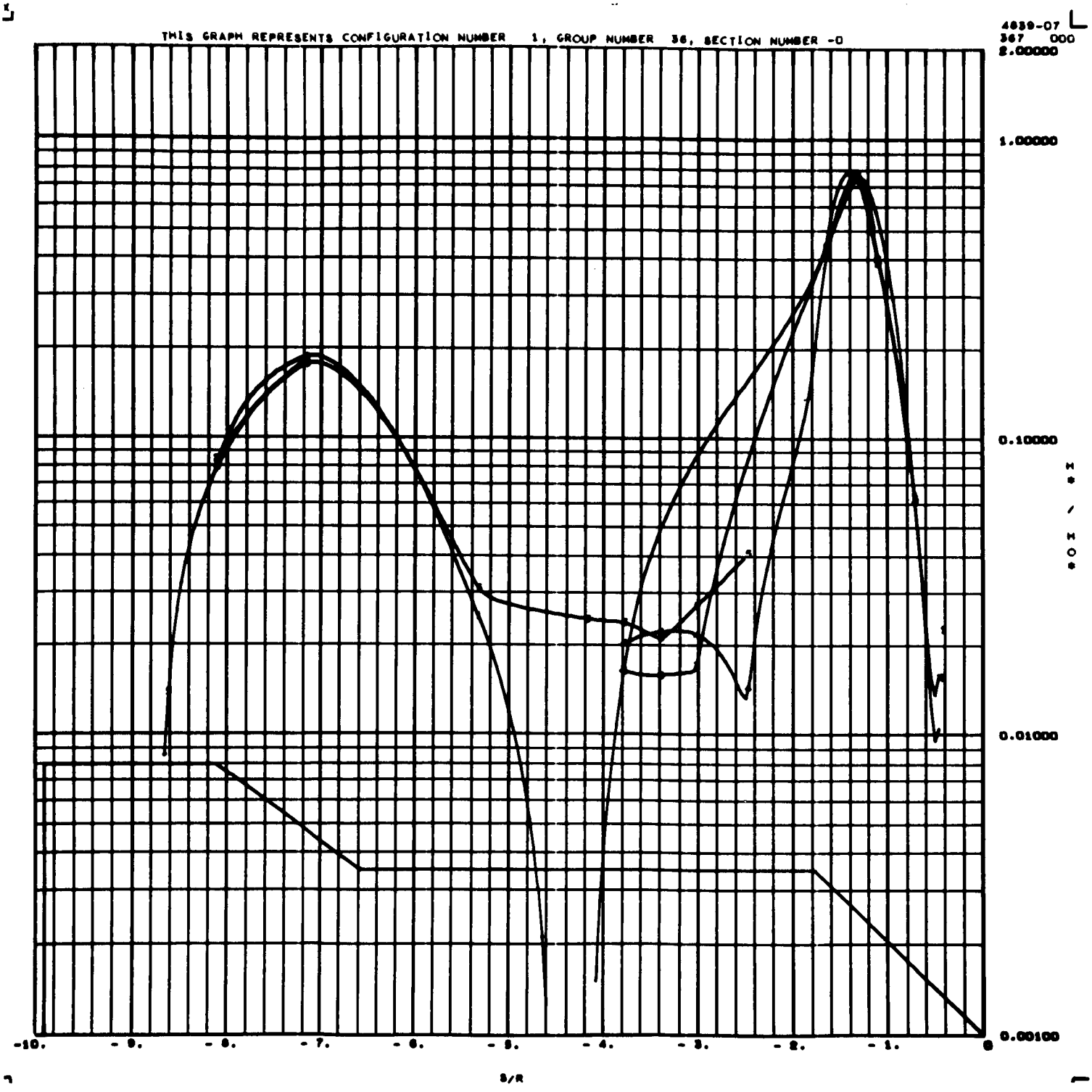
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 36
TOTAL PRESSURE 1641.5 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1861.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



~~CONFIDENTIAL~~

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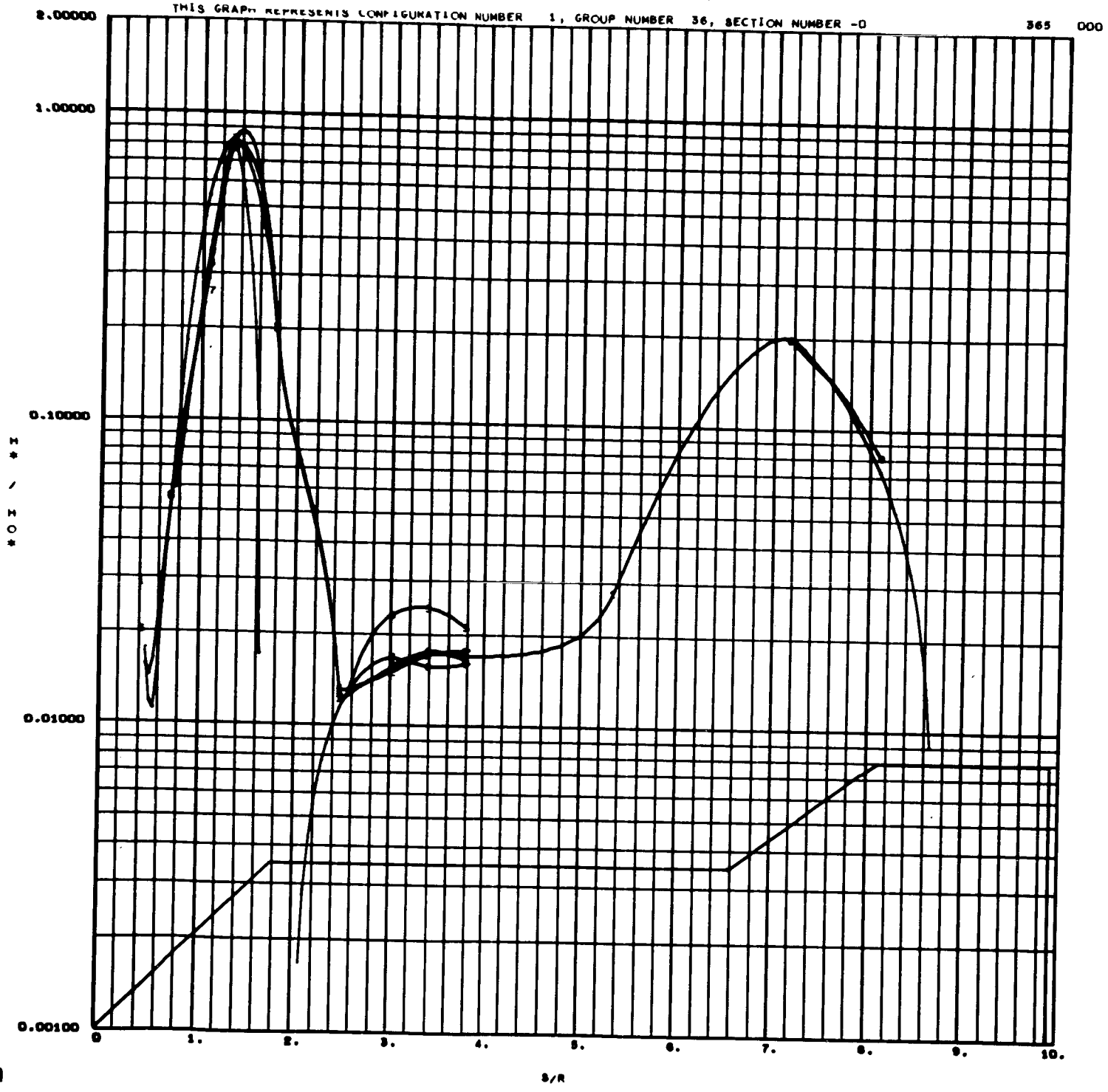
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 36
TOTAL PRESSURE 1641.5 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1861.90 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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[redacted]

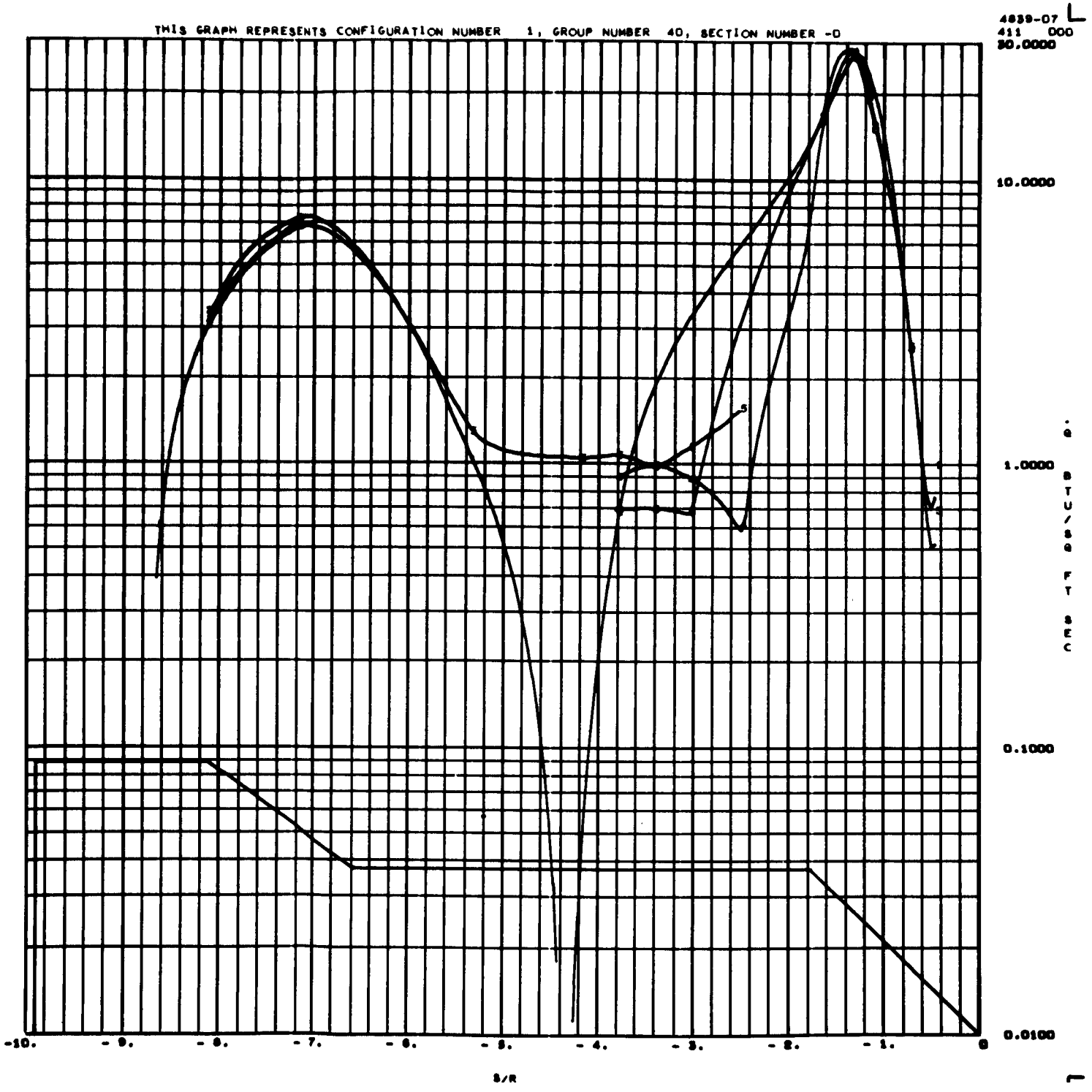
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 40
TOTAL PRESSURE 1639.8 PSIA
REYNOLDS NUMBER PER INCH 0.1682 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1876.20 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

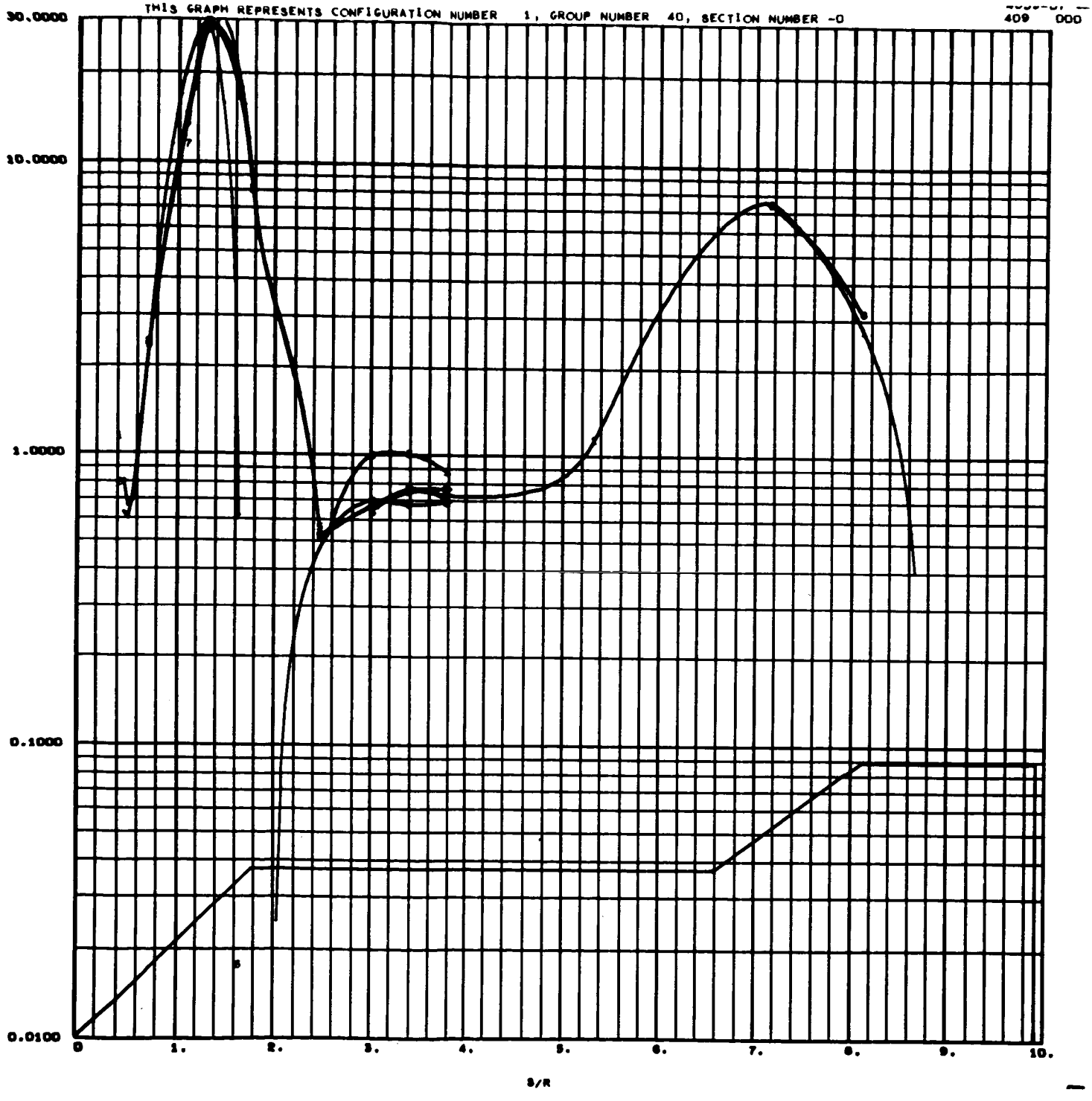
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 40
TOTAL PRESSURE 1639.8 PSIA
REYNOLDS NUMBER PER INCH 0.1682 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1876.20 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

CONFIDENTIAL

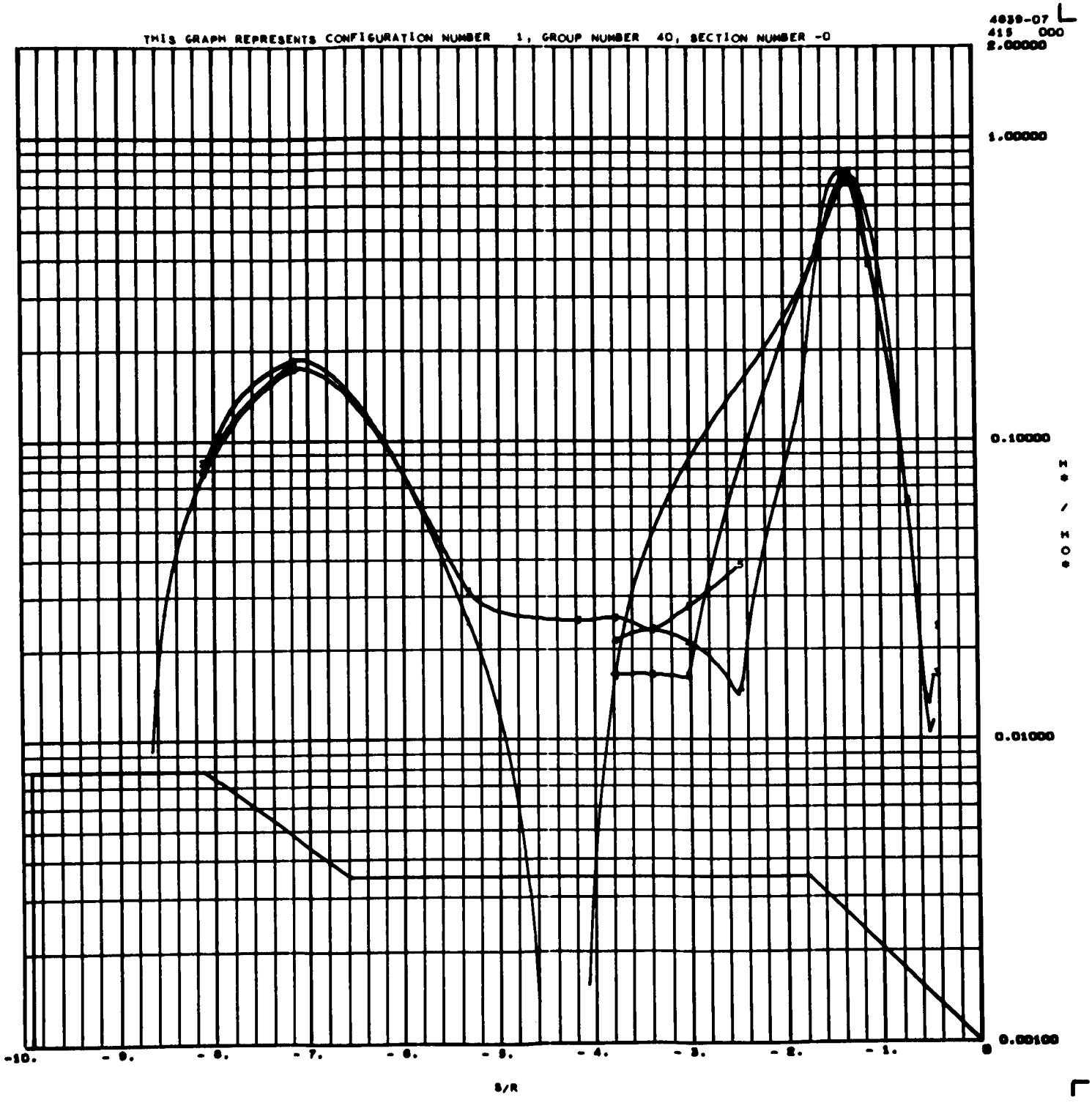
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 40
TOTAL PRESSURE 1639.8 PSIA
REYNOLDS NUMBER PER INCH 0.1682 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1876.20 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

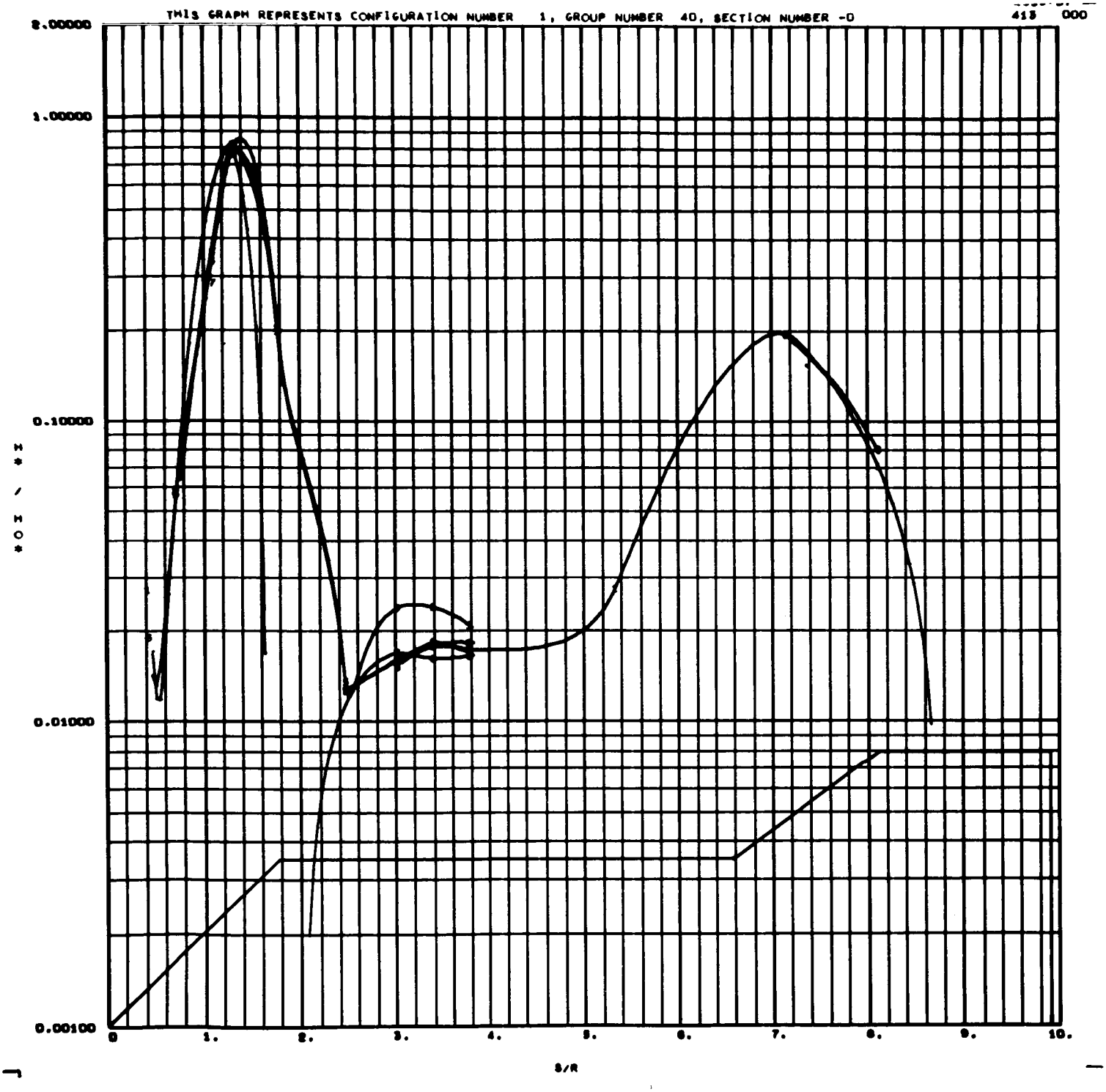
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 40
TOTAL PRESSURE 1639.8 PSIA
REYNOLDS NUMBER PER INCH 0.1682 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1876.20 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

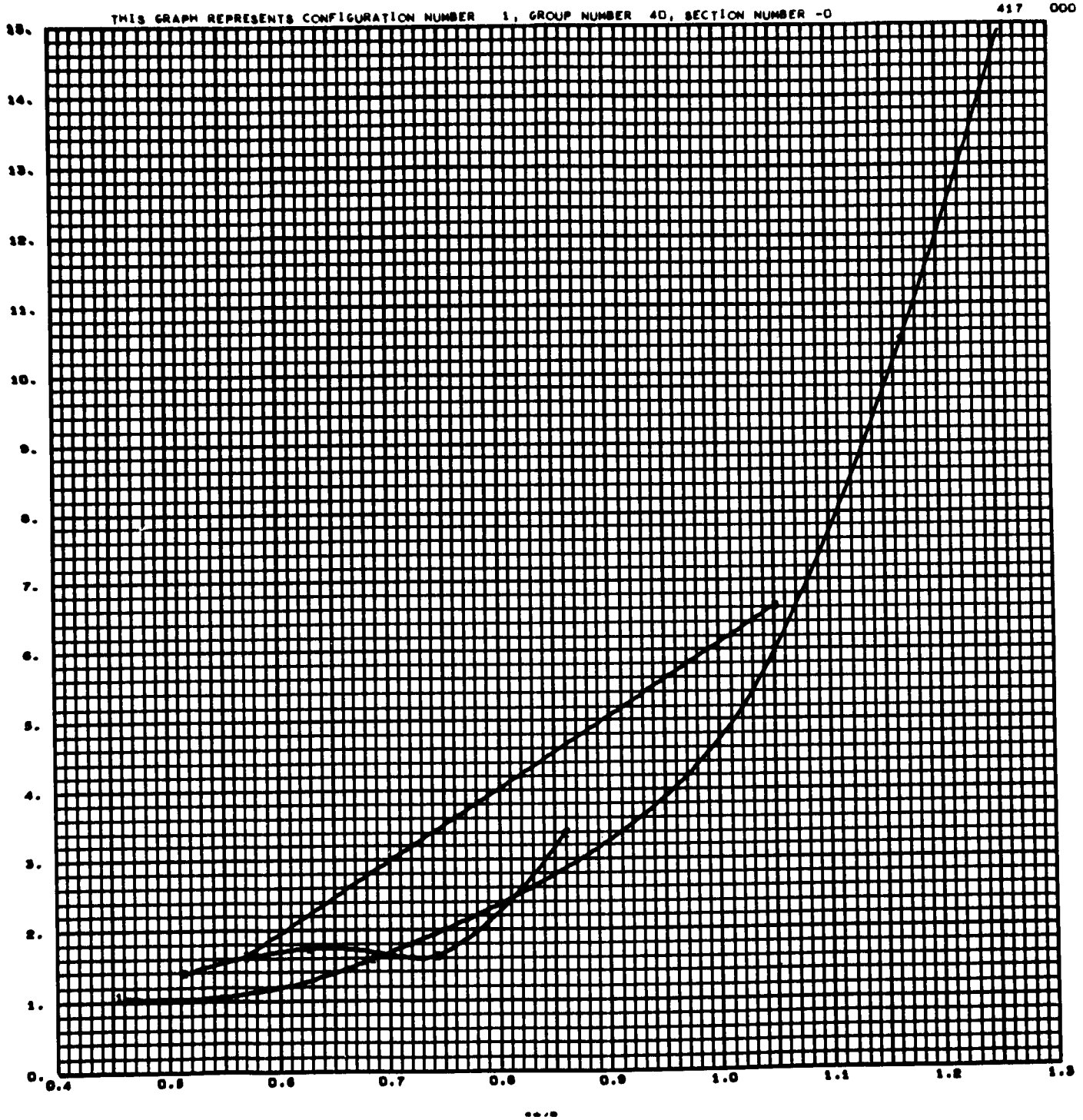
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 40
TOTAL PRESSURE 1639.8 PSIA
REYNOLDS NUMBER PER INCH 0.1682 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1876.20 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	

4839-07
417 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 40, SECTION NUMBER -0



[redacted]

HEAT TRANSFER TEST

APOLLO

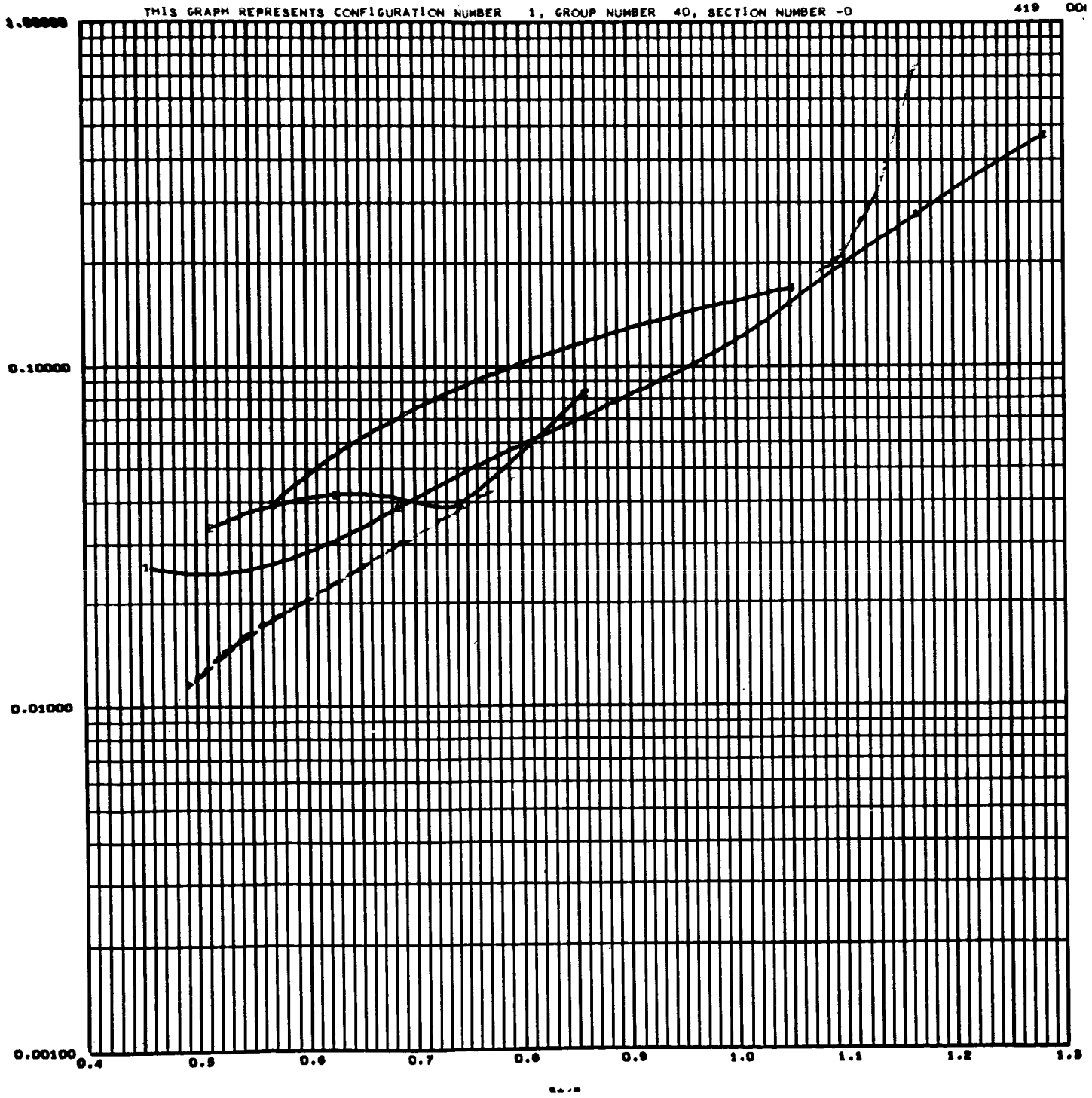
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 40
TOTAL PRESSURE 1639.8 PSIA
REYNOLDS NUMBER PER INCH 0.1682 X 10^6
H_o^* 0.11512 LB/FT^2 X SEC
TOTAL TEMPERATURE 1876.20 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3

4639-07
419 001

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 40, SECTION NUMBER -0



[redacted]

CONFIDENTIAL

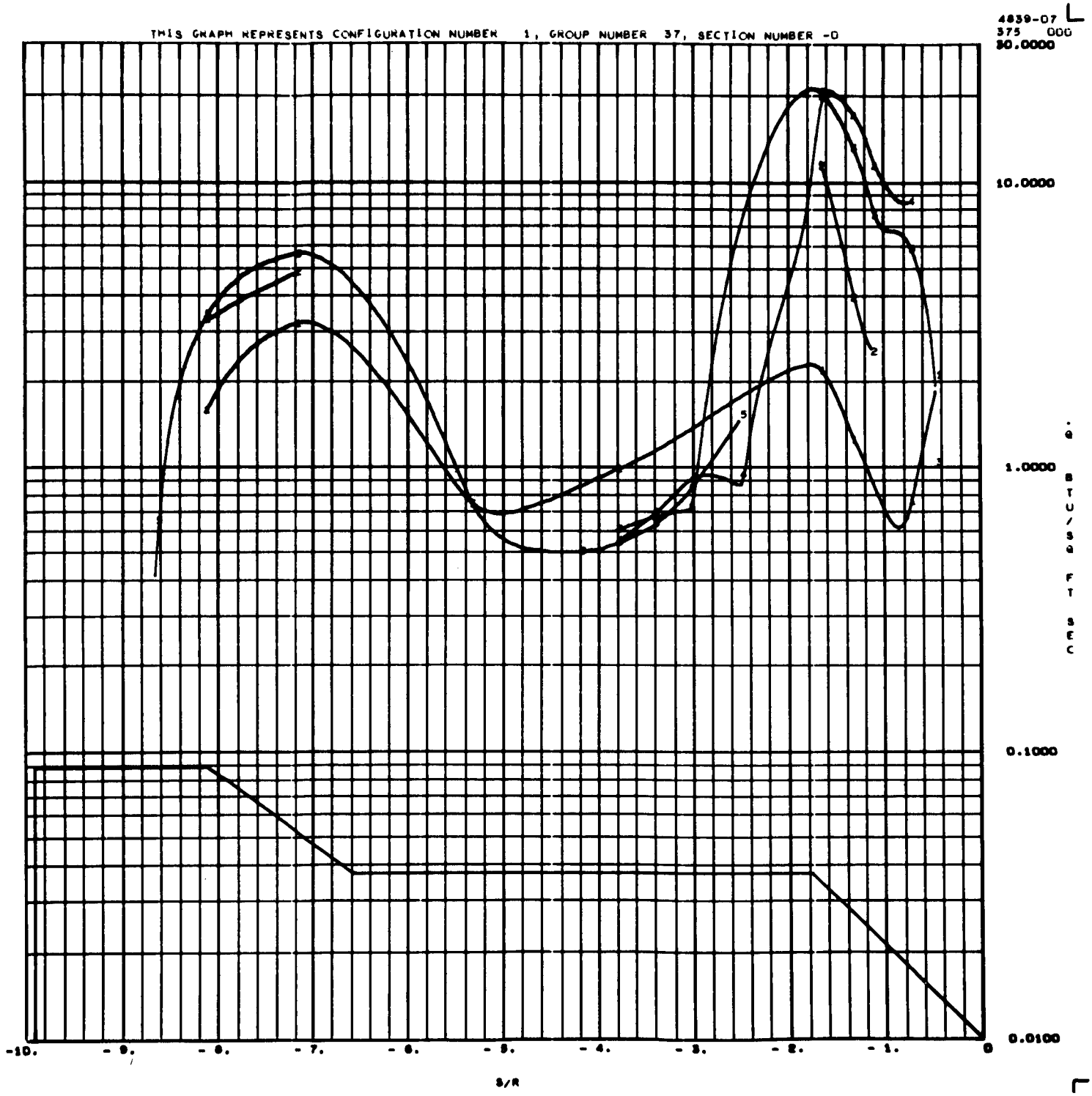
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 37
TOTAL PRESSURE 1642.0 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1862.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

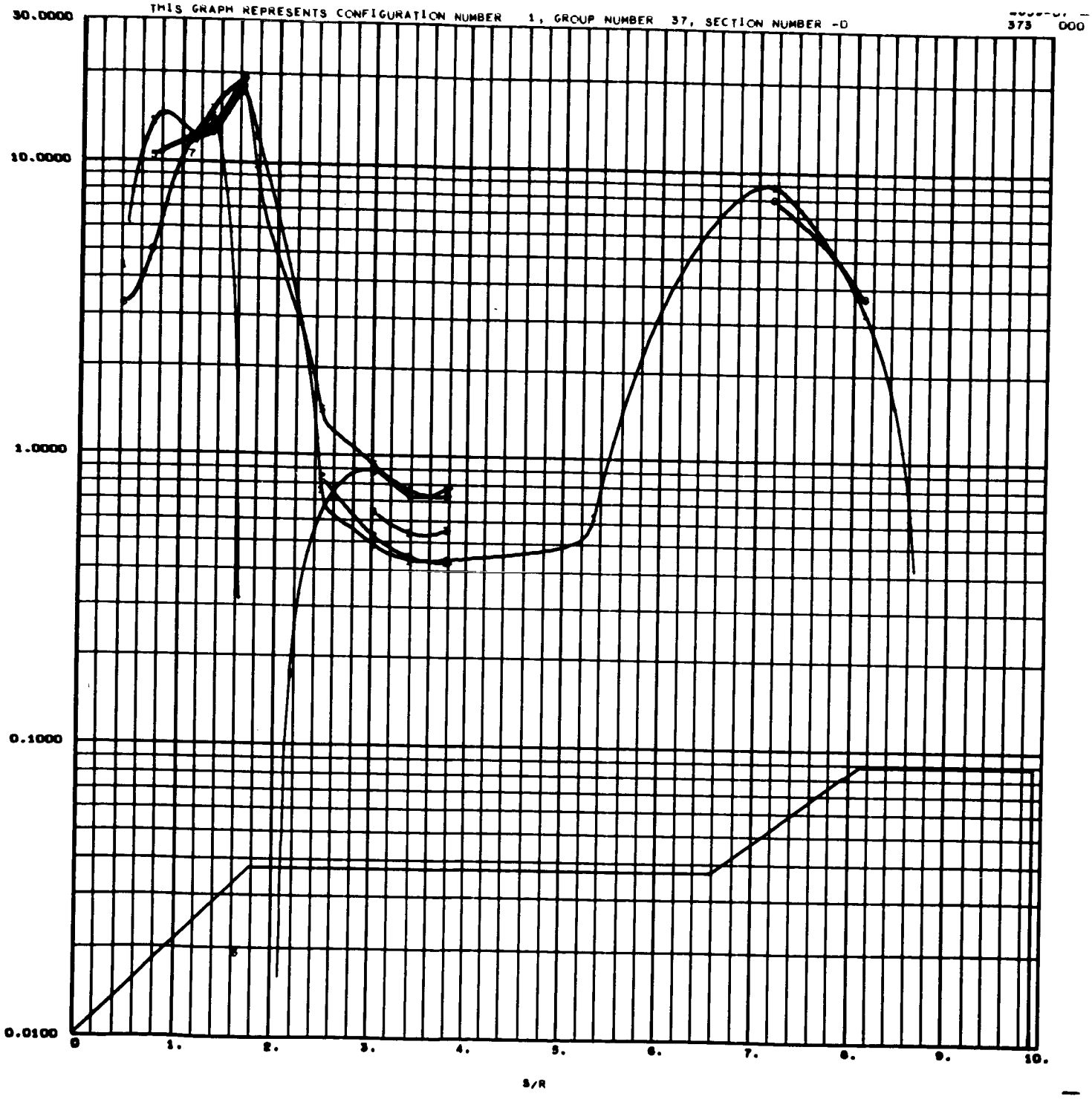
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 37
TOTAL PRESSURE 1642.0 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1862.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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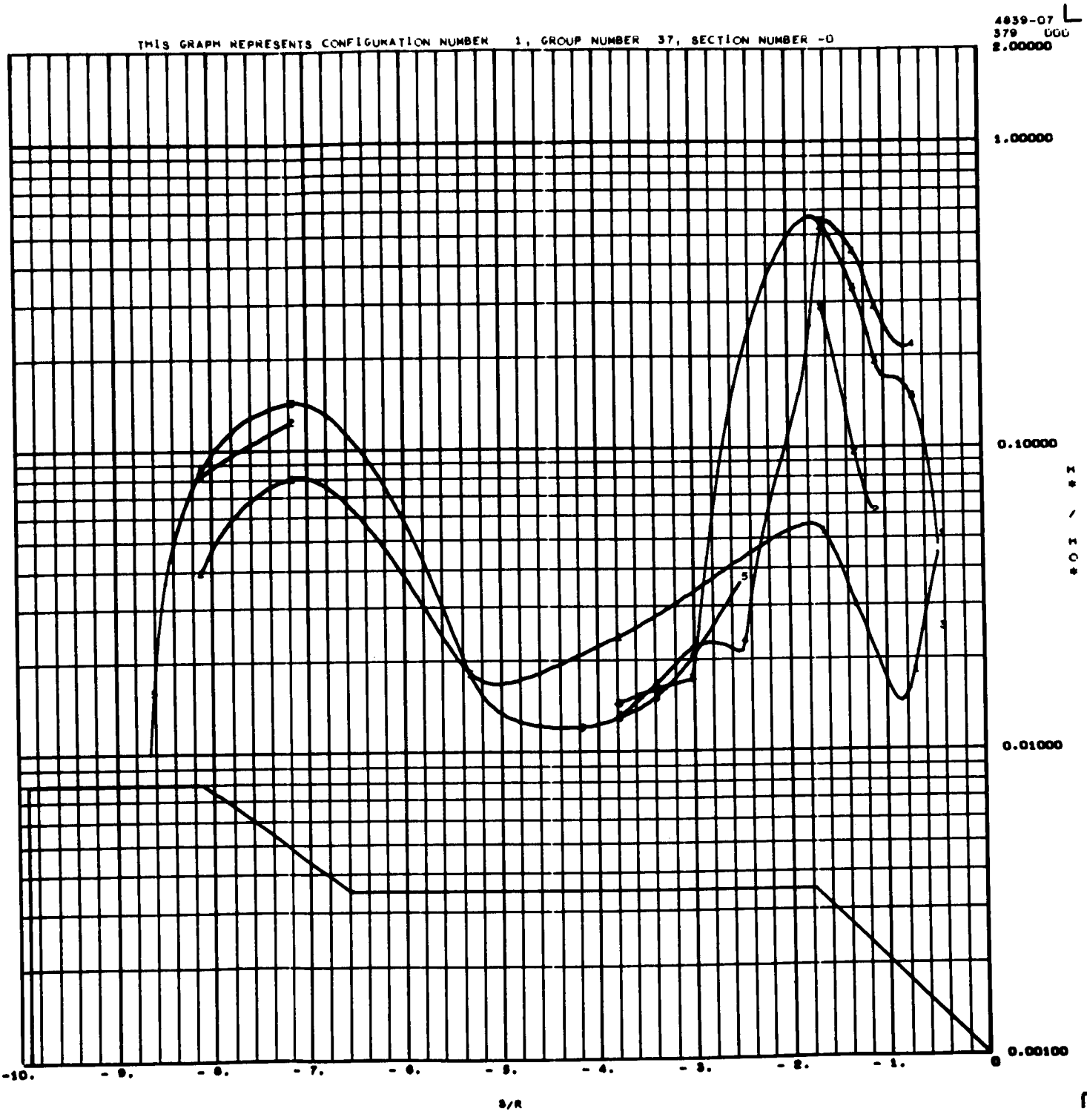
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 37
TOTAL PRESSURE 1642.0 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1862.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



~~CONFIDENTIAL~~

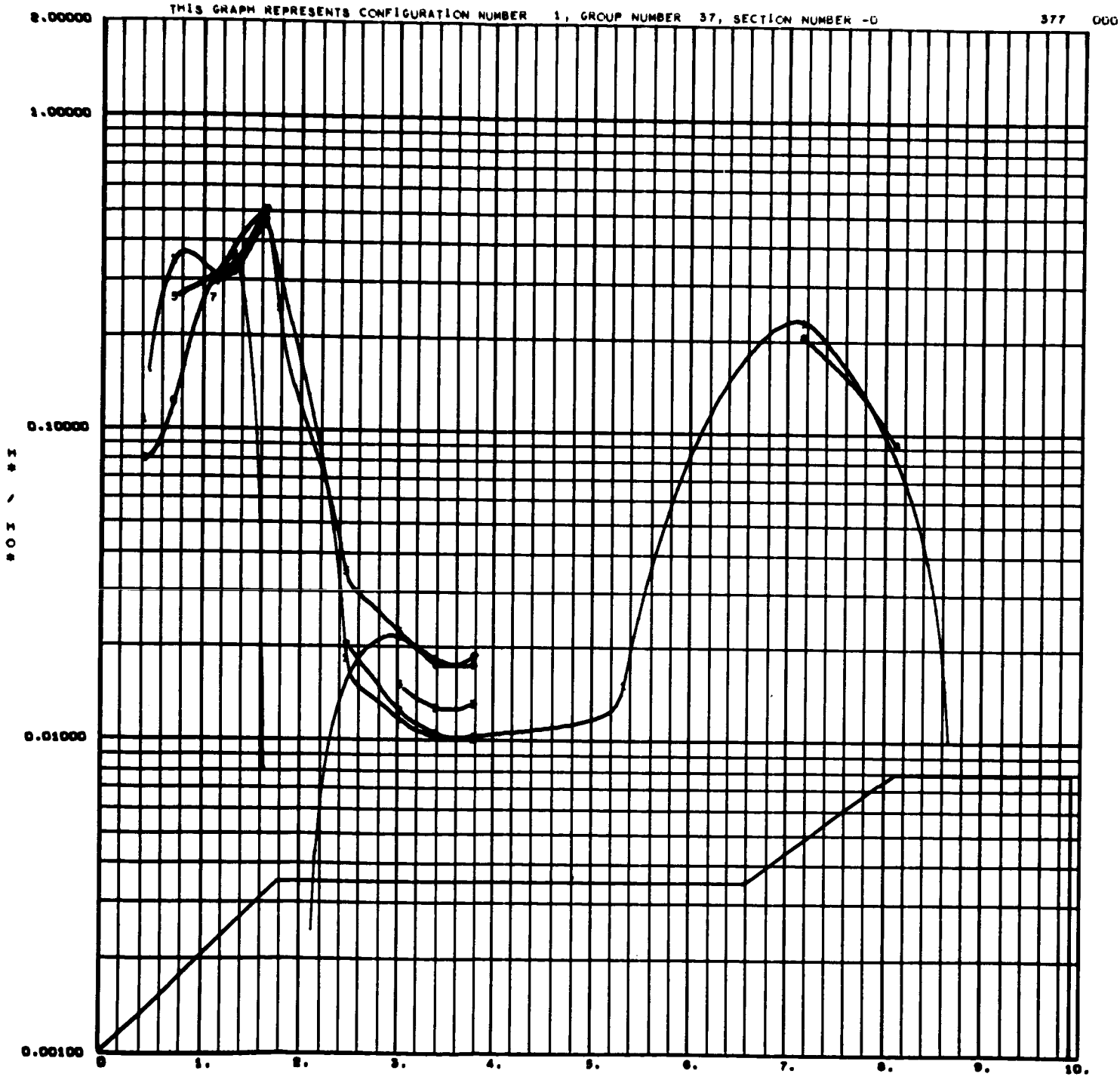
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 37
TOTAL PRESSURE 1642.0 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1862.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

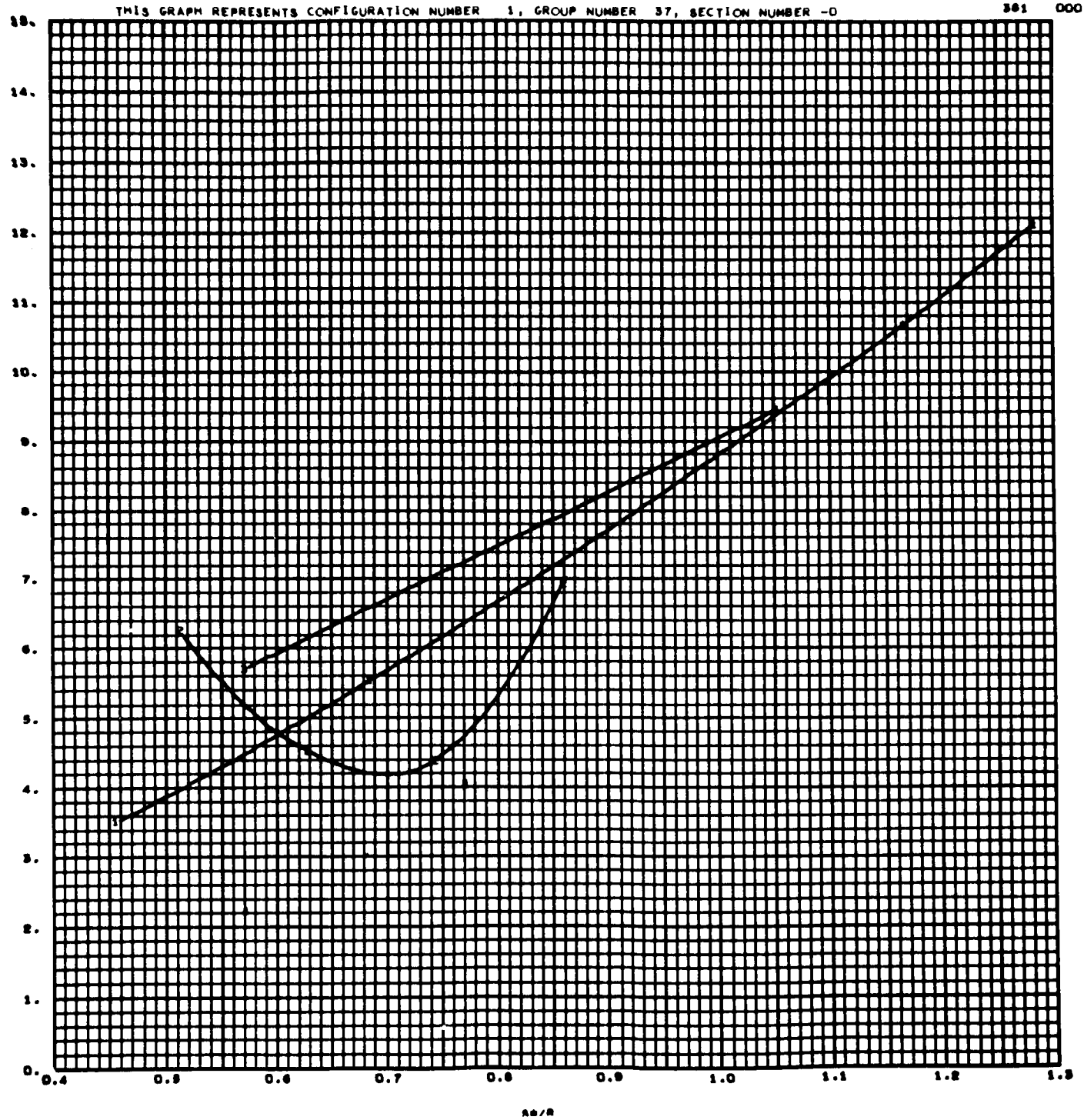
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 37
TOTAL PRESSURE 1642.0 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
M_∞ * 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1862.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-07 L
361 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 37, SECTION NUMBER -0



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[redacted]

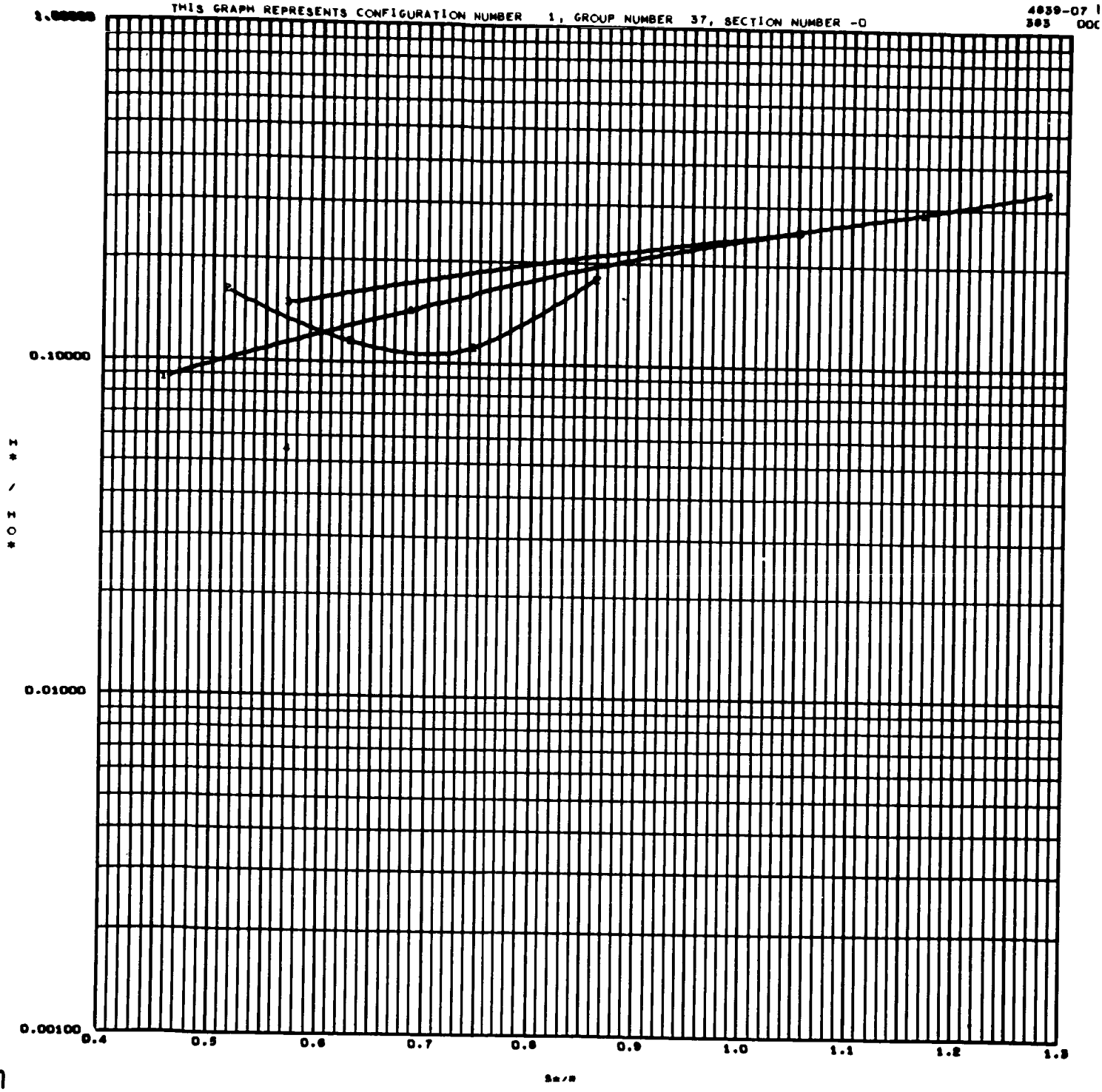
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 37
TOTAL PRESSURE 1642.0 PSIA
REYNOLDS NUMBER PER INCH 0.1707 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1862.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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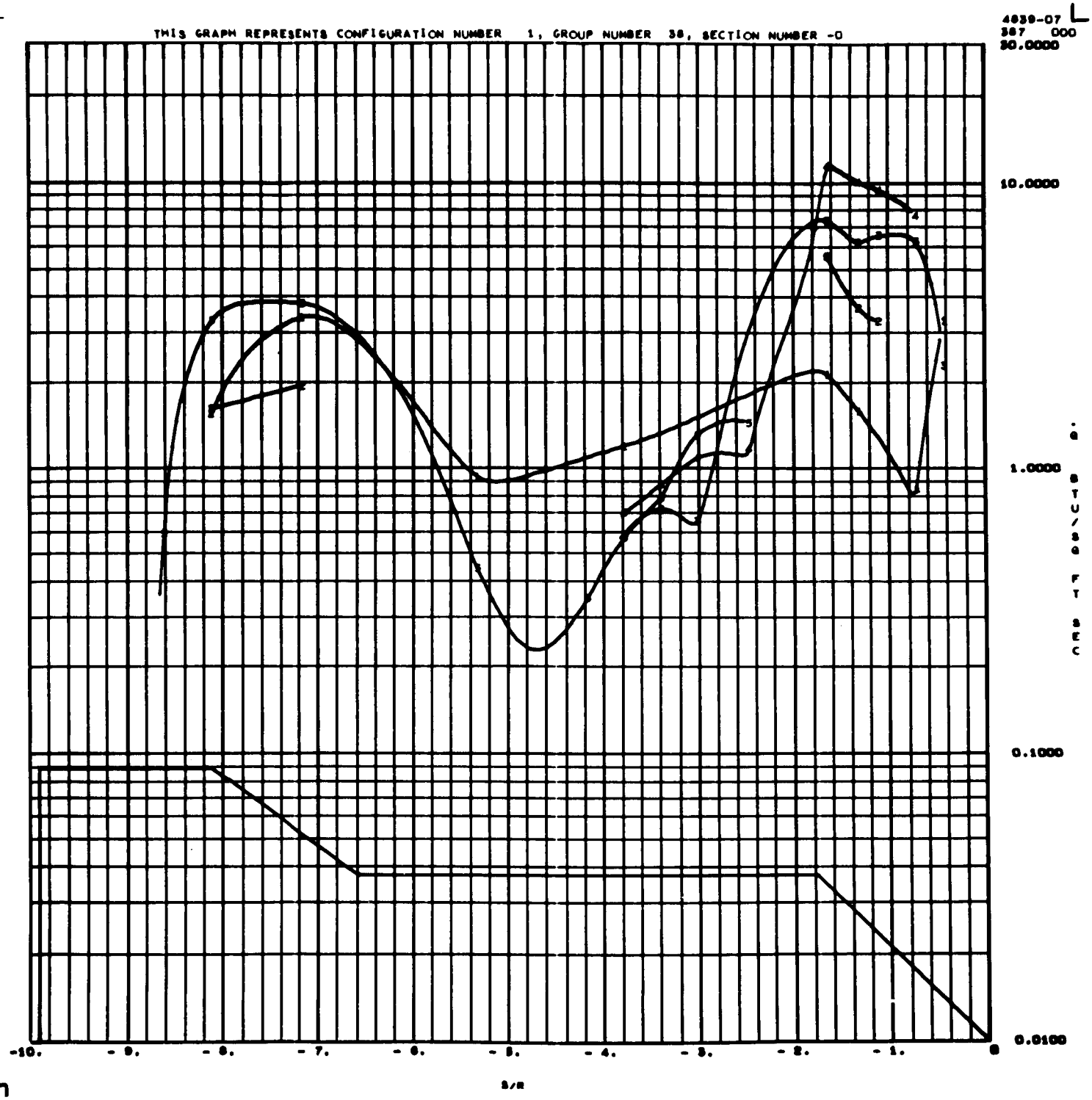
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 38
TOTAL PRESSURE 1643.0 PSIA
REYNOLDS NUMBER PER INCH 0.1698 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.40 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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CONFIDENTIAL

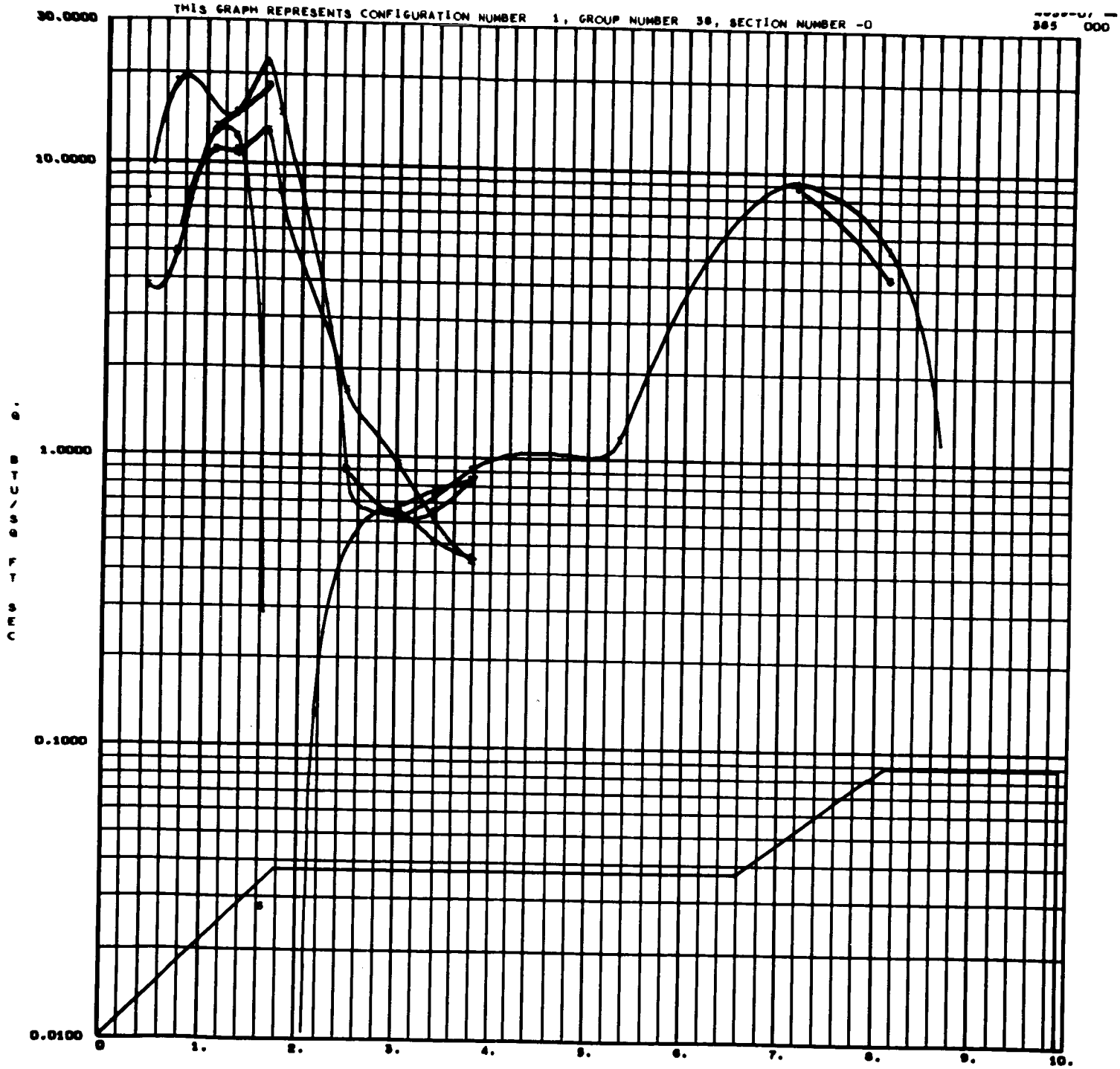
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.16
GROUP NO. 38
TOTAL PRESSURE 1643.0 PSIA
REYNOLDS NUMBER PER INCH 0.1698 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1860.40 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 38
TOTAL PRESSURE 1643.0 PSIA
REYNOLDS NUMBER PER INCH 0.1698 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.40 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 38, SECTION NUMBER -0

4859-07
391 000

2.00000
1.00000
0.10000
0.01000
0.00100

H^*/H_o^*

-10. -9. -8. -7. -6. -5. -4. -3. -2. -1. 0

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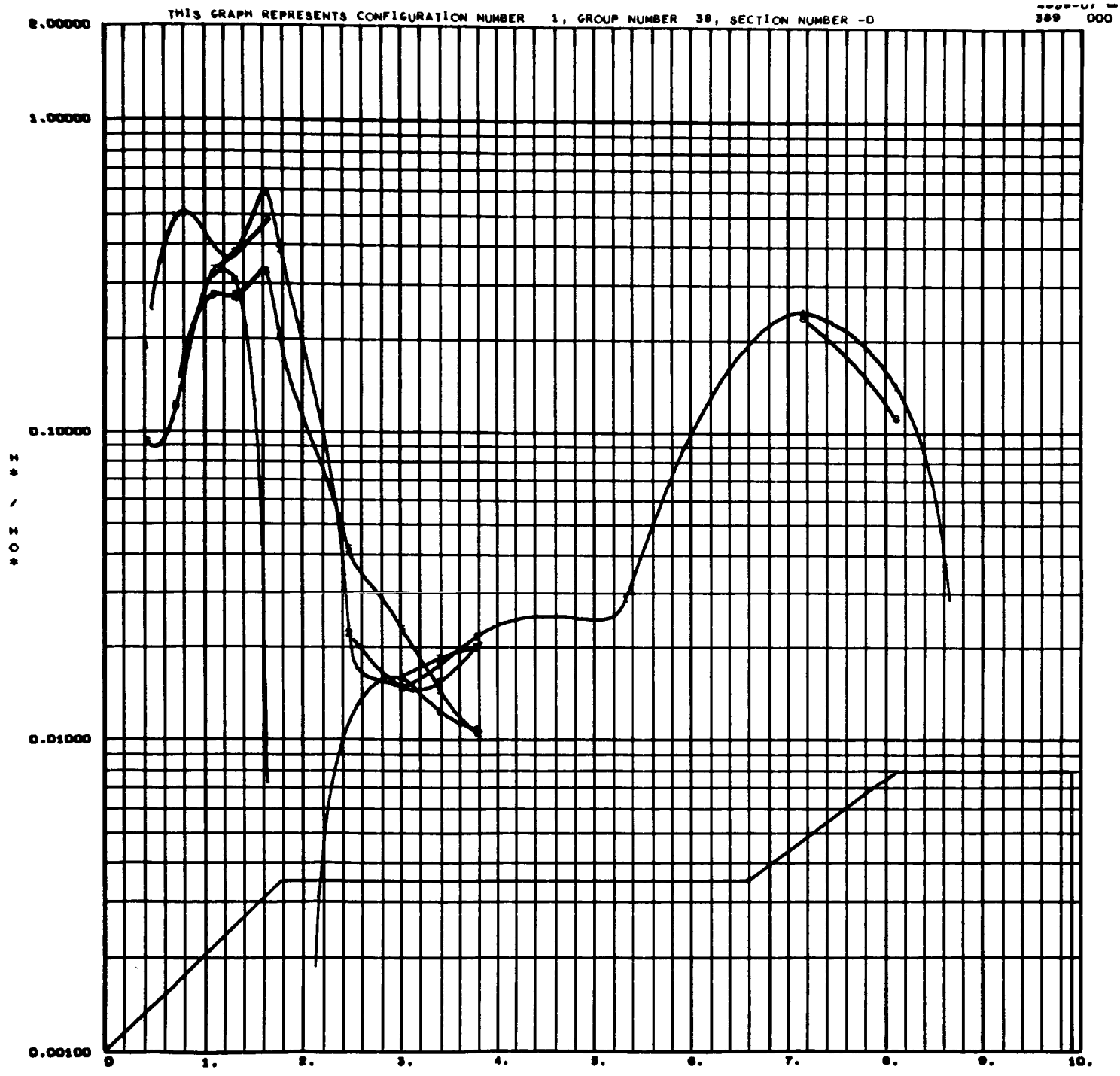
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 38
TOTAL PRESSURE 1643.0 PSIA
REYNOLDS NUMBER PER INCH 0.1698 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.40 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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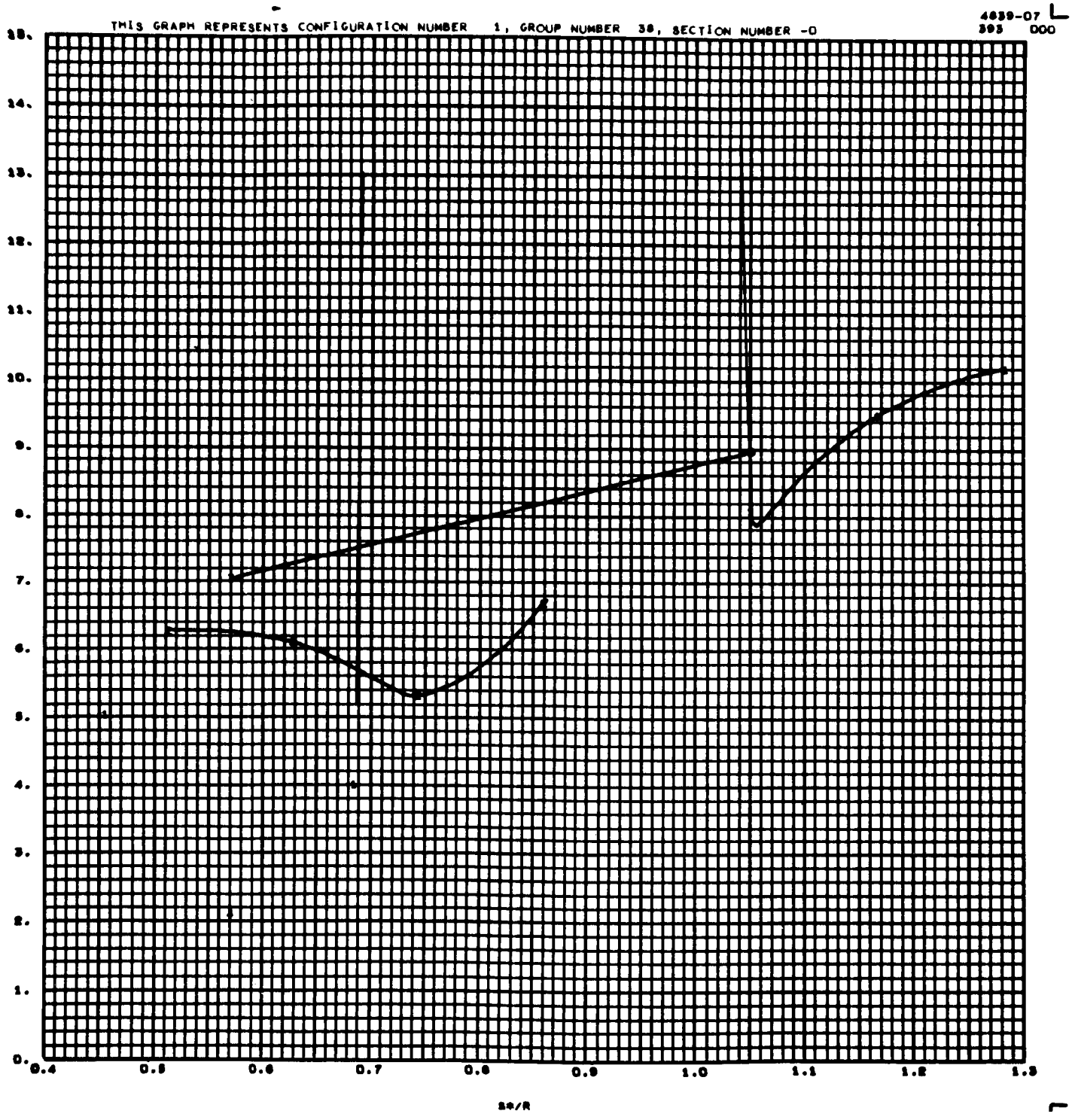
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 38
TOTAL PRESSURE 1643.0 PSIA
REYNOLDS NUMBER PER INCH 0.1698 X 10^6
H_o * 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.40 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA



~~CONFIDENTIAL~~

[redacted]

HEAT TRANSFER TEST

APOLLO

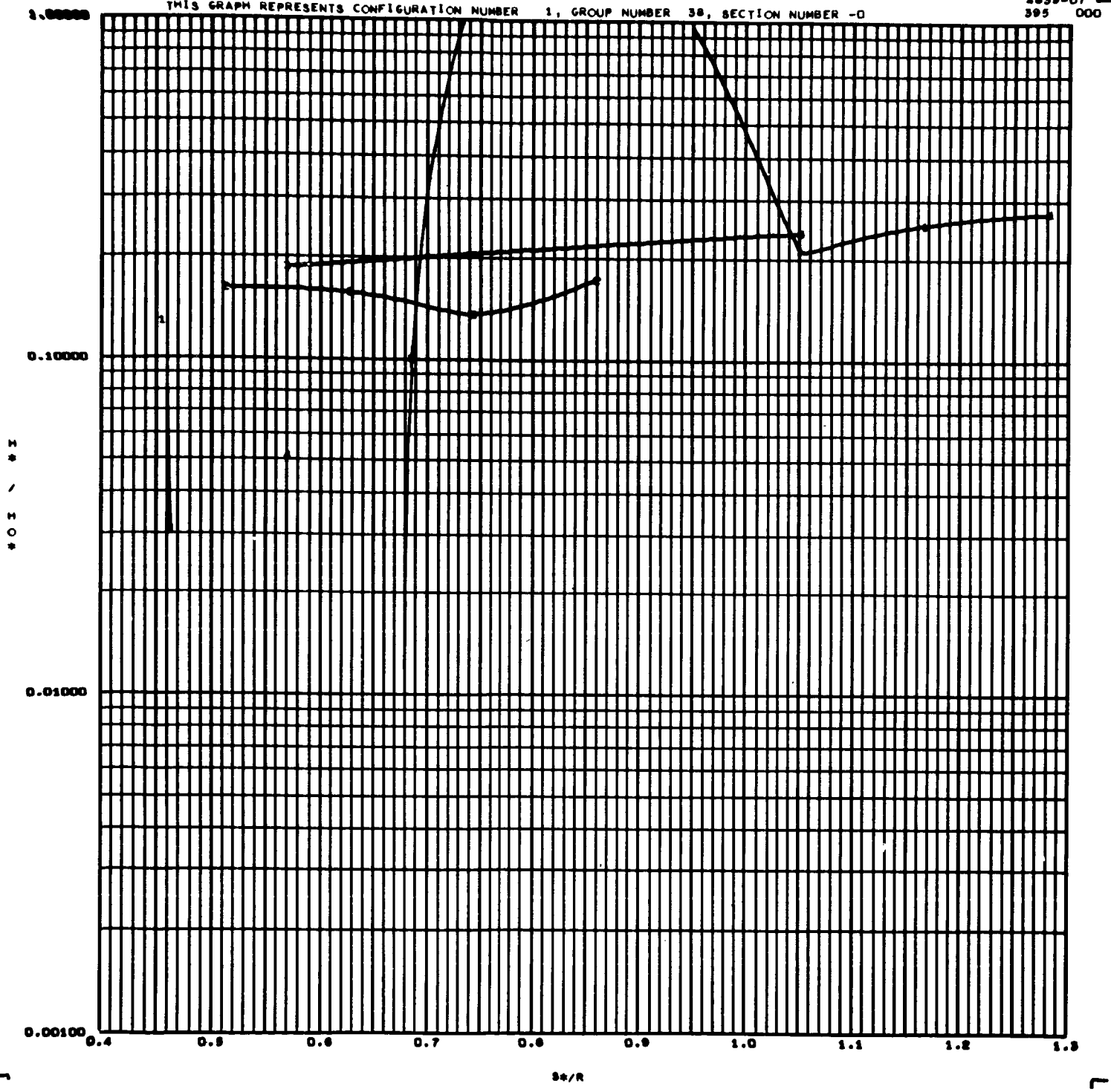
A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 38
TOTAL PRESSURE 1643.0 PSIA
REYNOLDS NUMBER PER INCH 0.1698 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.40 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 1, GROUP NUMBER 38, SECTION NUMBER -0

4839-07
395 000



[redacted]

~~CONFIDENTIAL~~

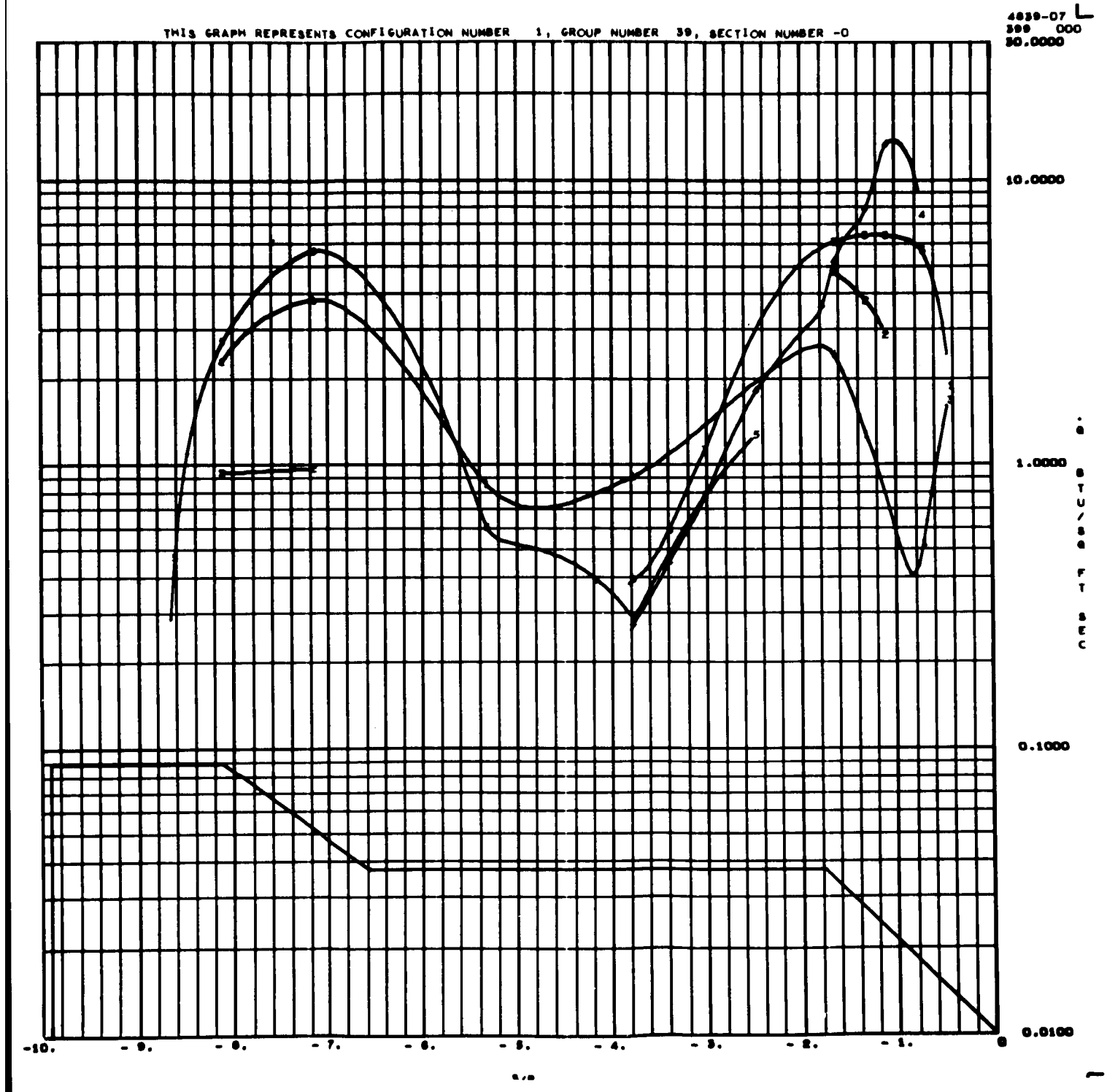
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 39
TOTAL PRESSURE 1638.3 PSIA
REYNOLDS NUMBER PER INCH 0.1688 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1871.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



~~CONFIDENTIAL~~

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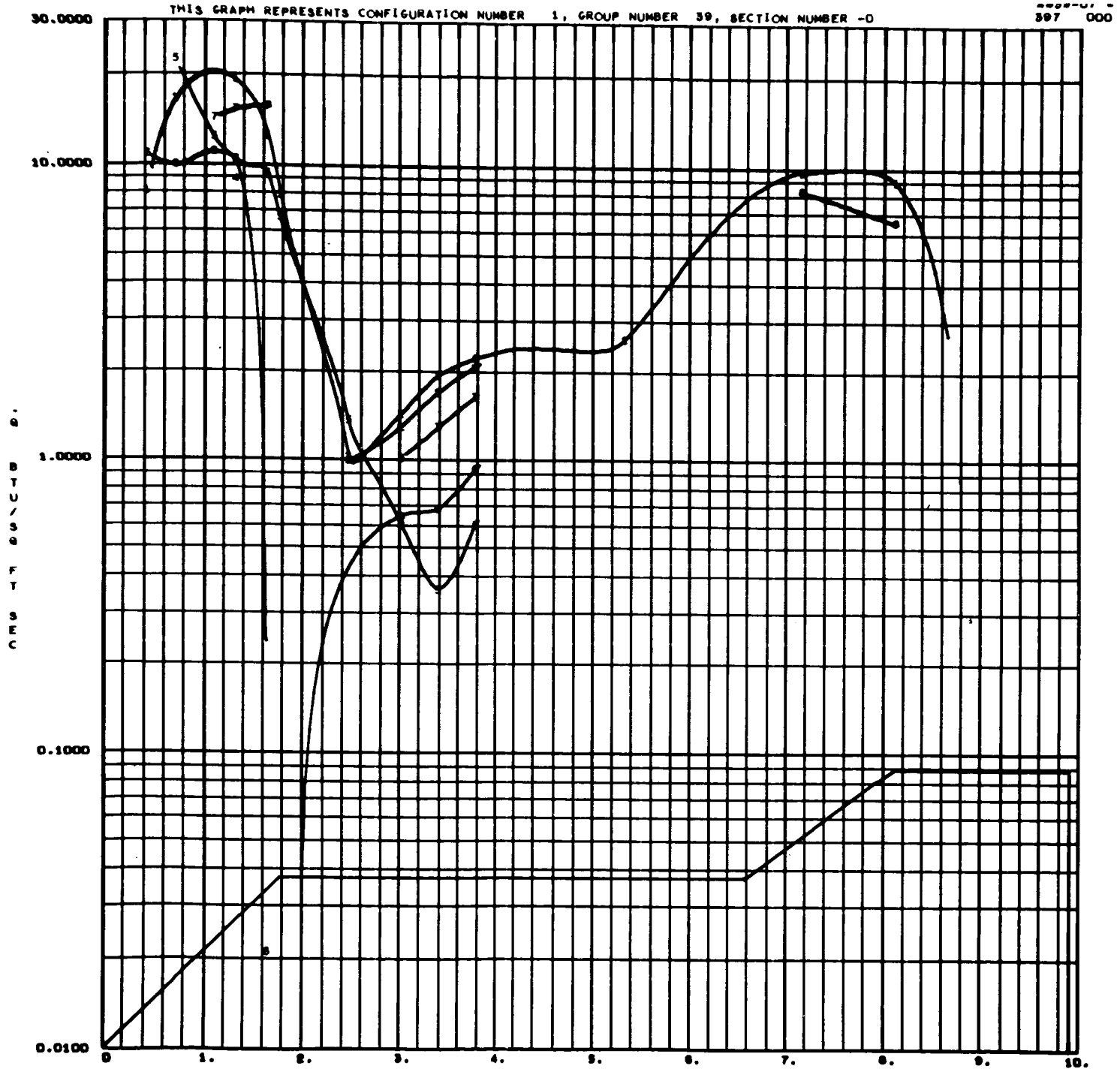
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 39
TOTAL PRESSURE 1638.3 PSIA
REYNOLDS NUMBER PER INCH 0.1688 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1871.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



CONFIDENTIAL

[redacted]

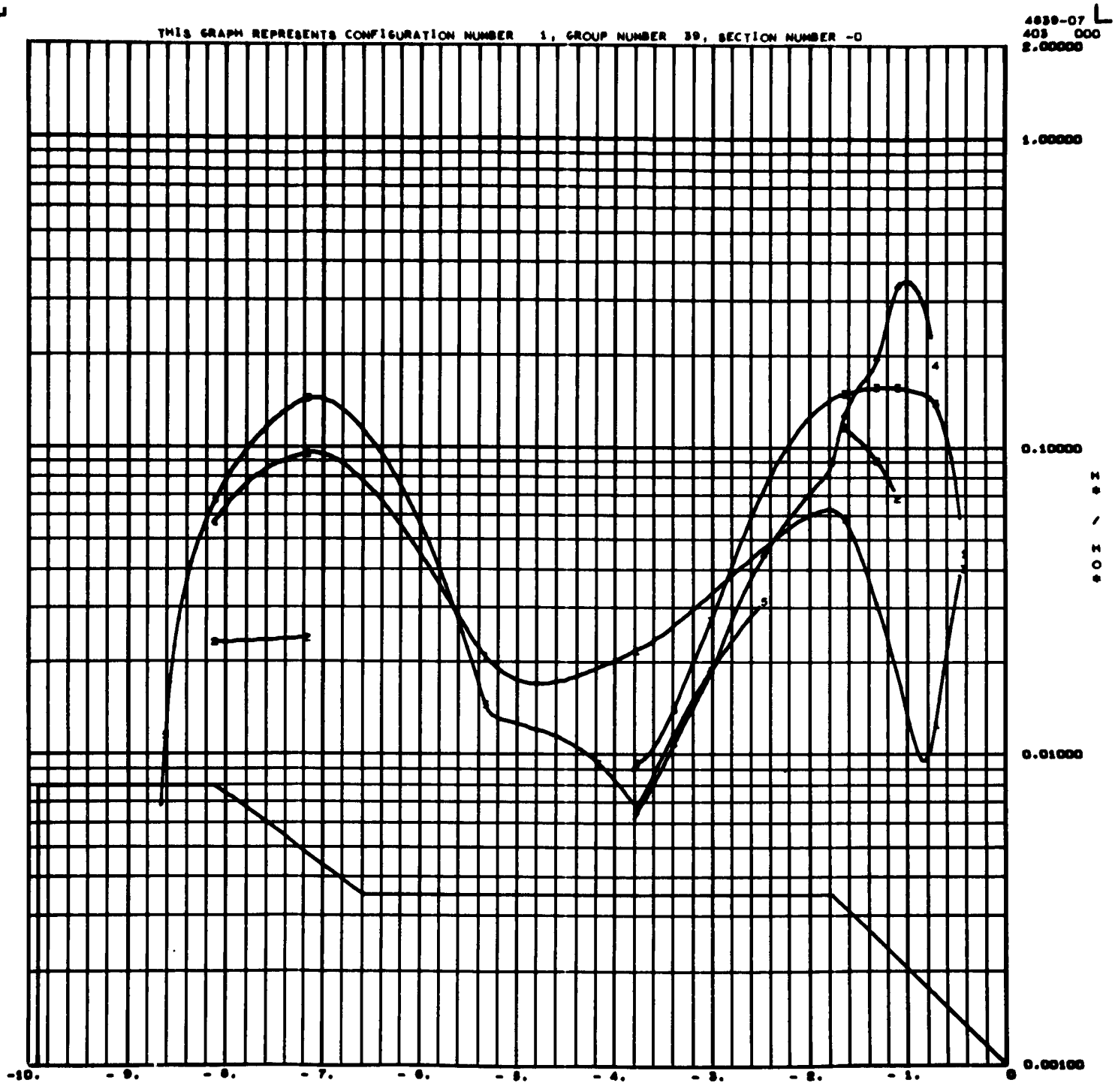
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 39
TOTAL PRESSURE 1638.3 PSIA
REYNOLDS NUMBER PER INCH 0.1688 X 10^6
H_o 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1871.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

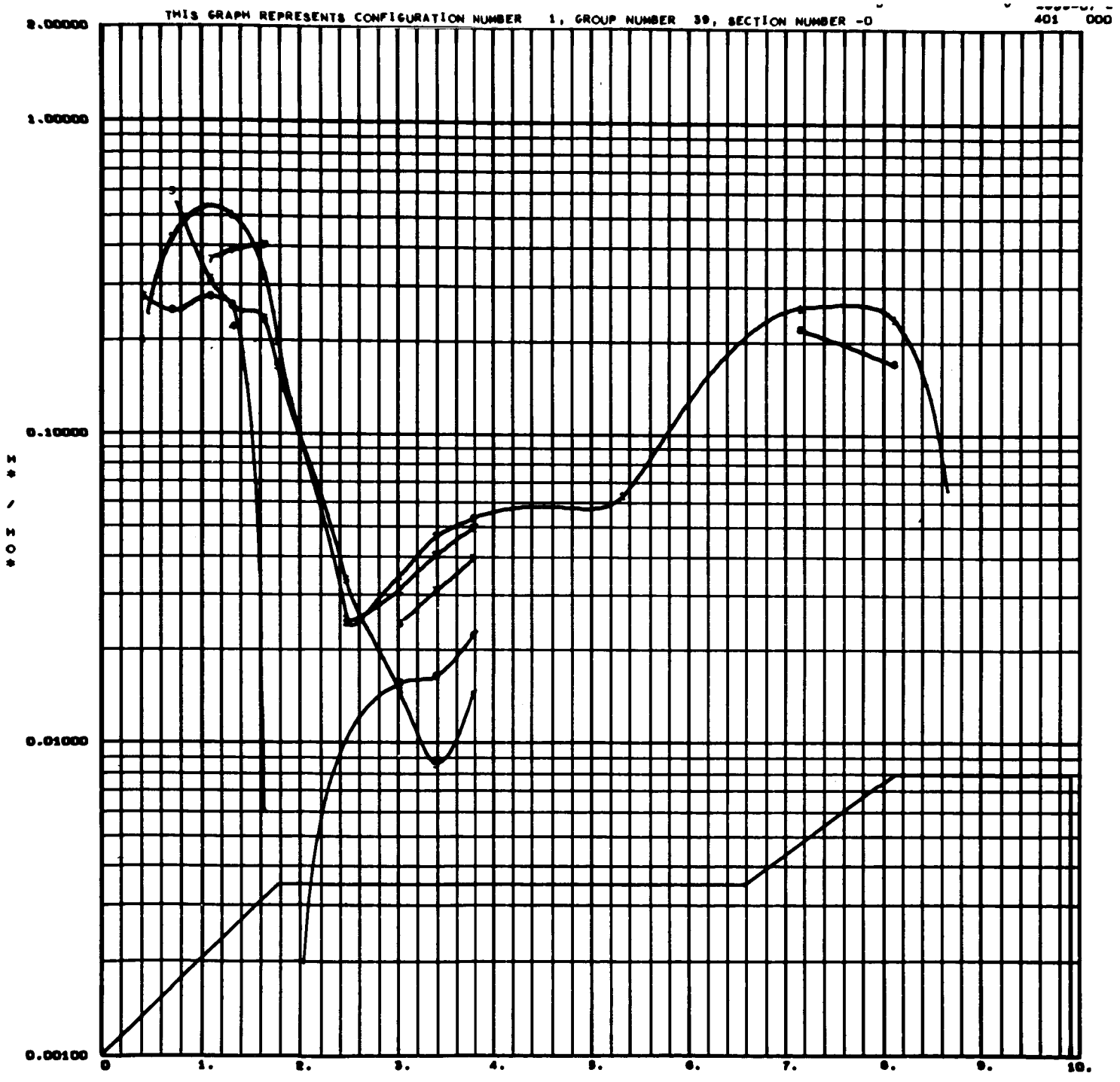
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 1 MACH NO. 10.18
GROUP NO. 39
TOTAL PRESSURE 1638.3 PSIA
REYNOLDS NUMBER PER INCH 0.1688 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1071.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

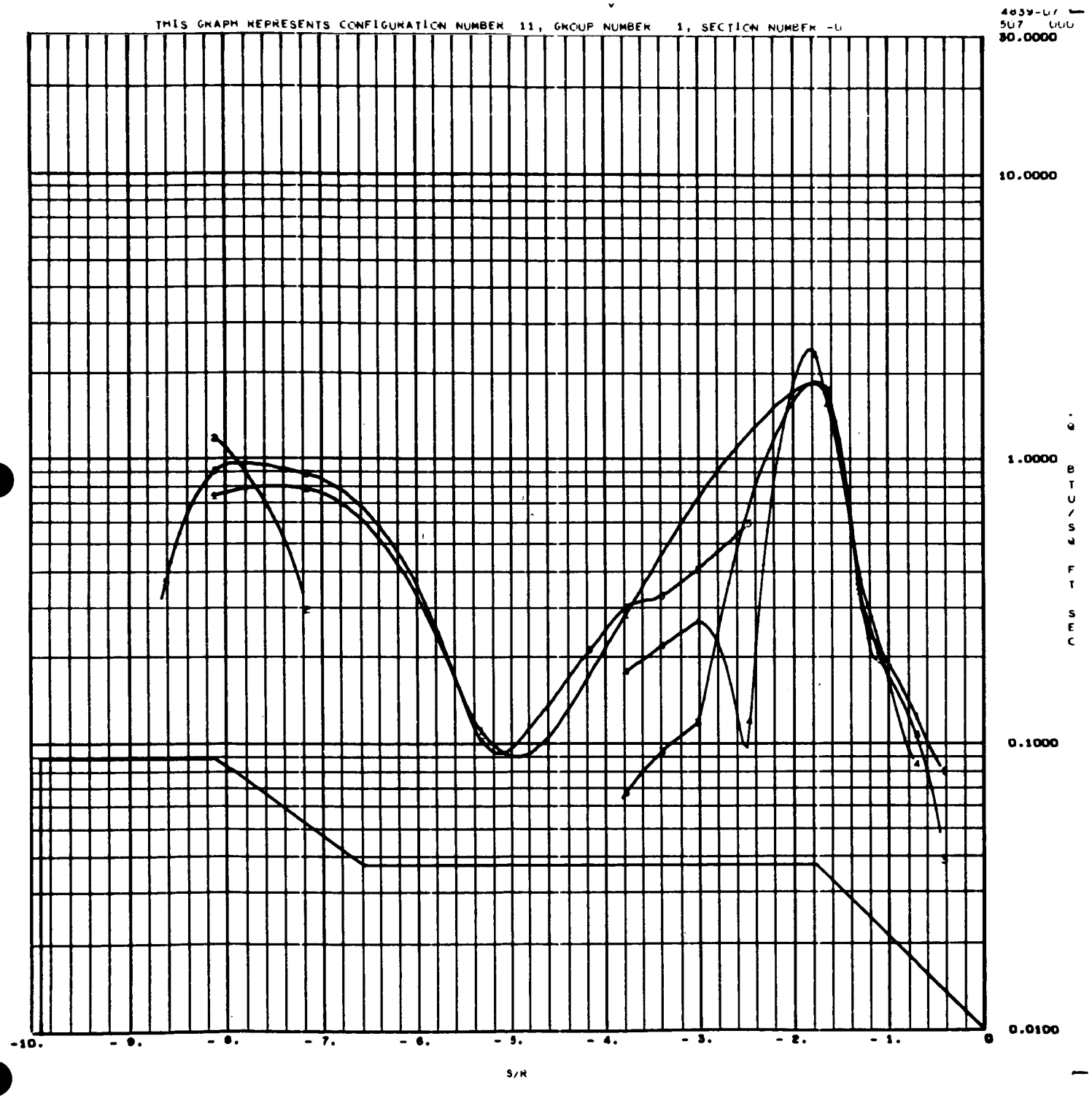
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 1
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1653.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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CONFIDENTIAL

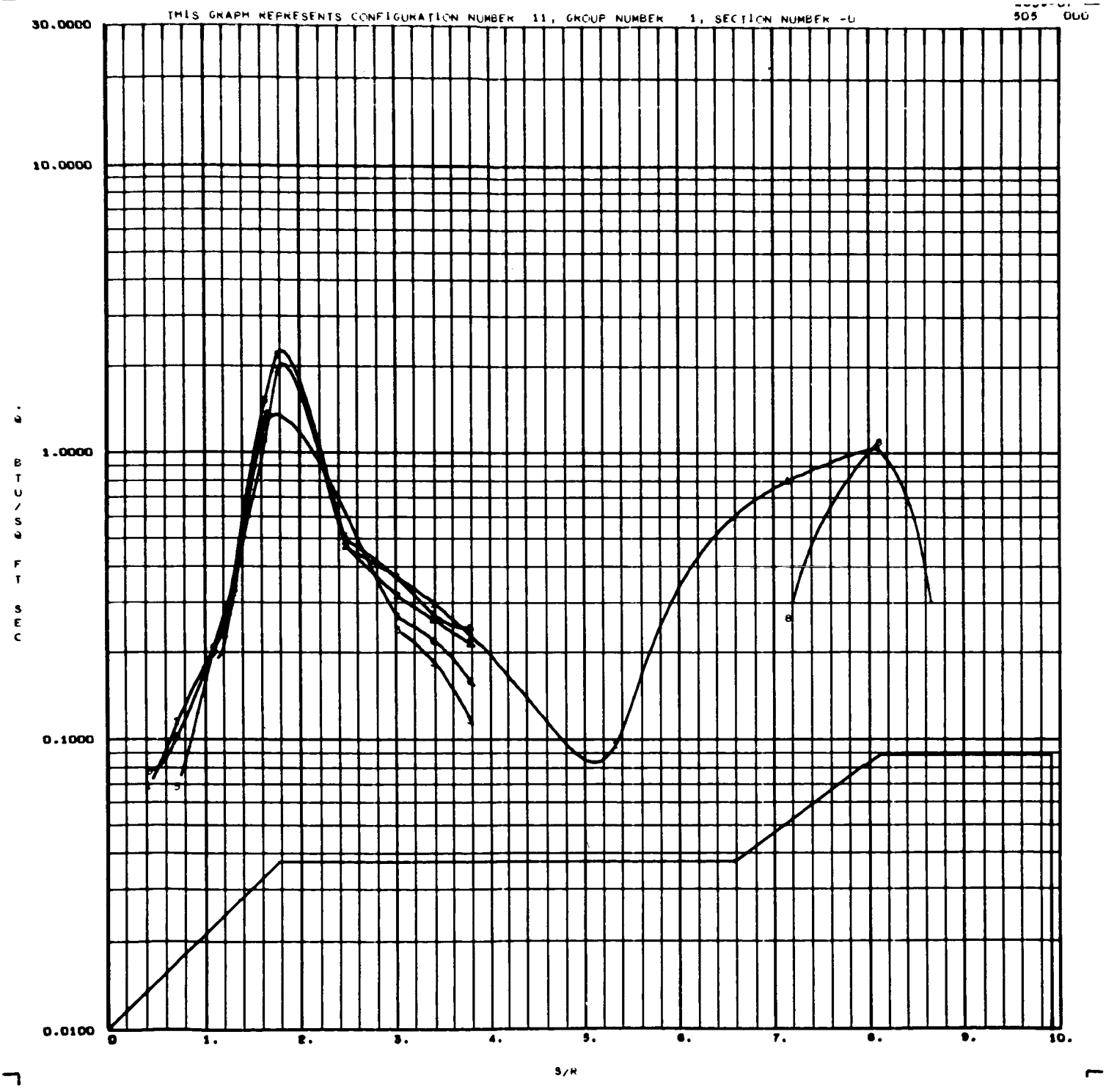
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 1
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_0^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1653.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

APOLLO

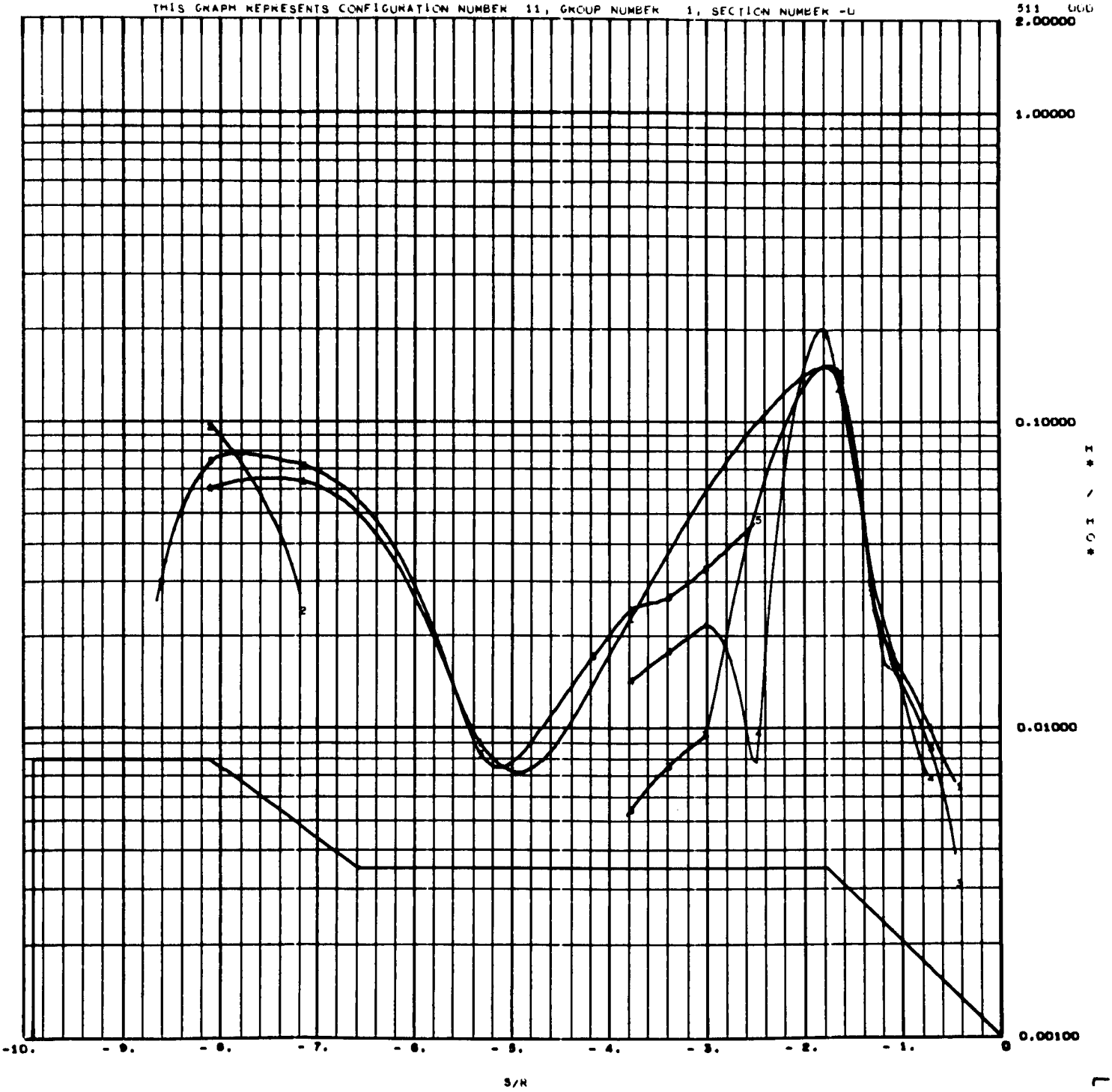
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 1
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0283 x 10^6
H_O^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1653.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 1, SECTION NUMBER -0

4839-07
511 000



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CONFIDENTIAL

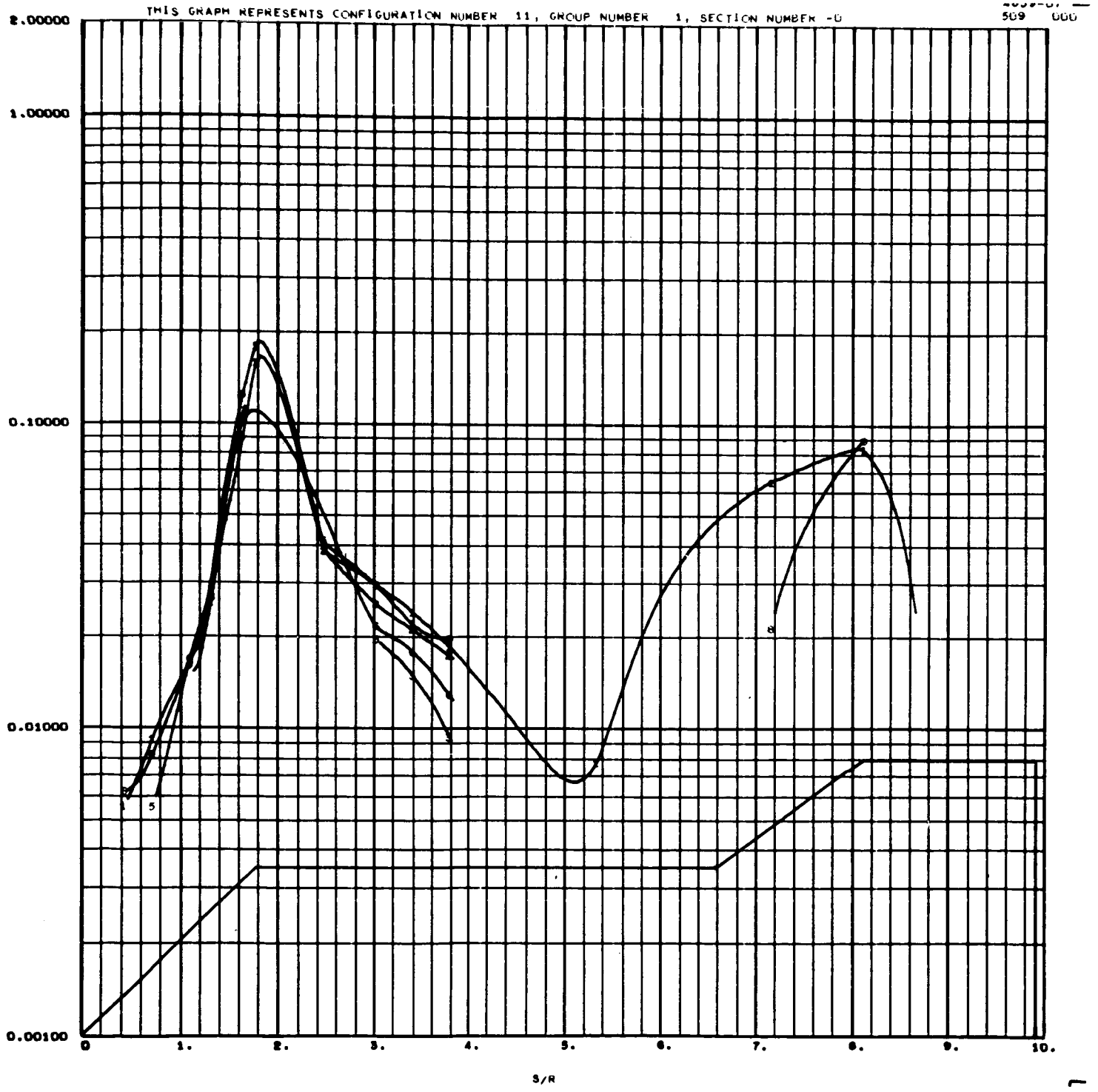
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 1
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1653.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



CONFIDENTIAL

[redacted]

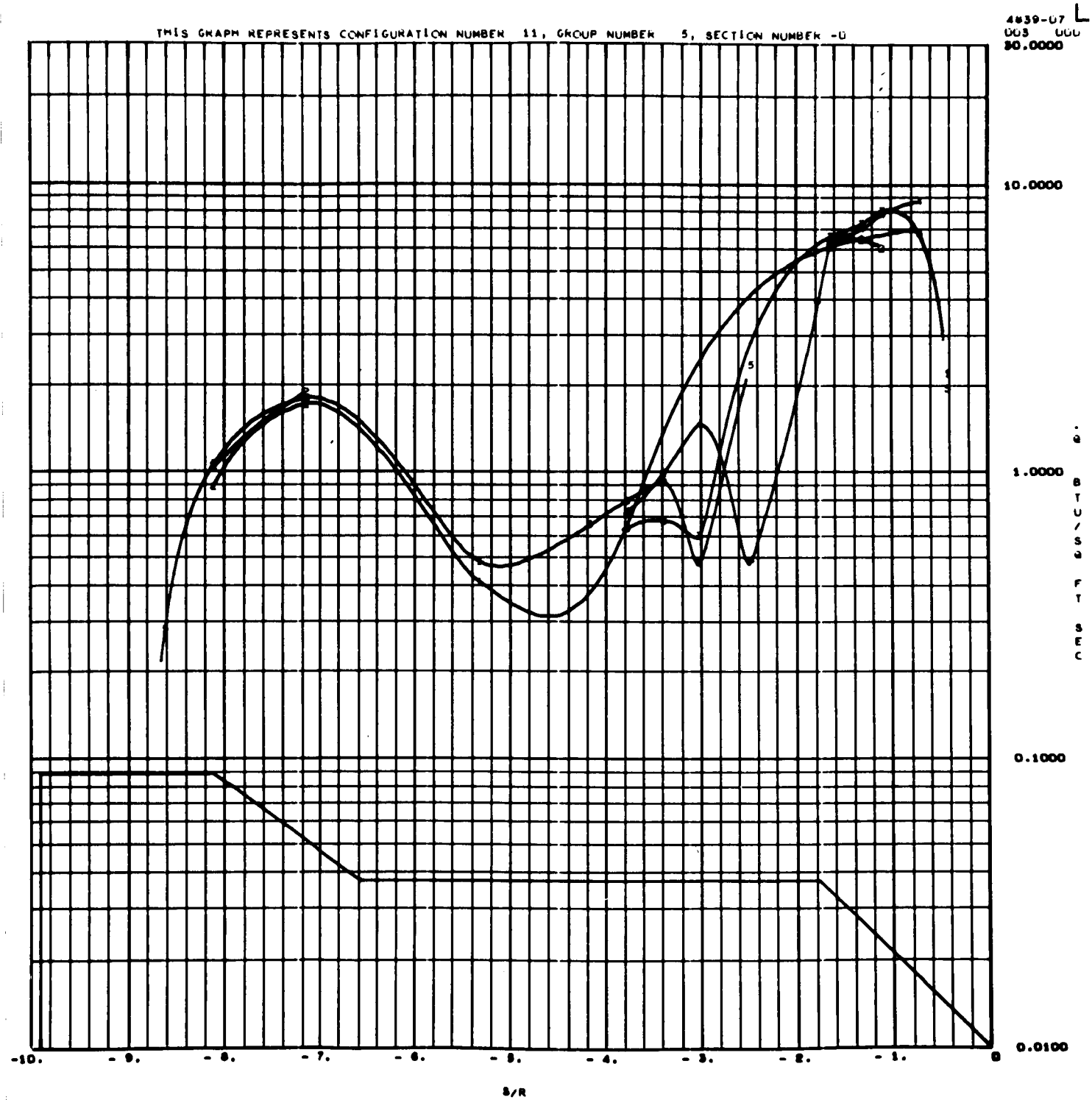
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 5
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
M_O^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1647.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

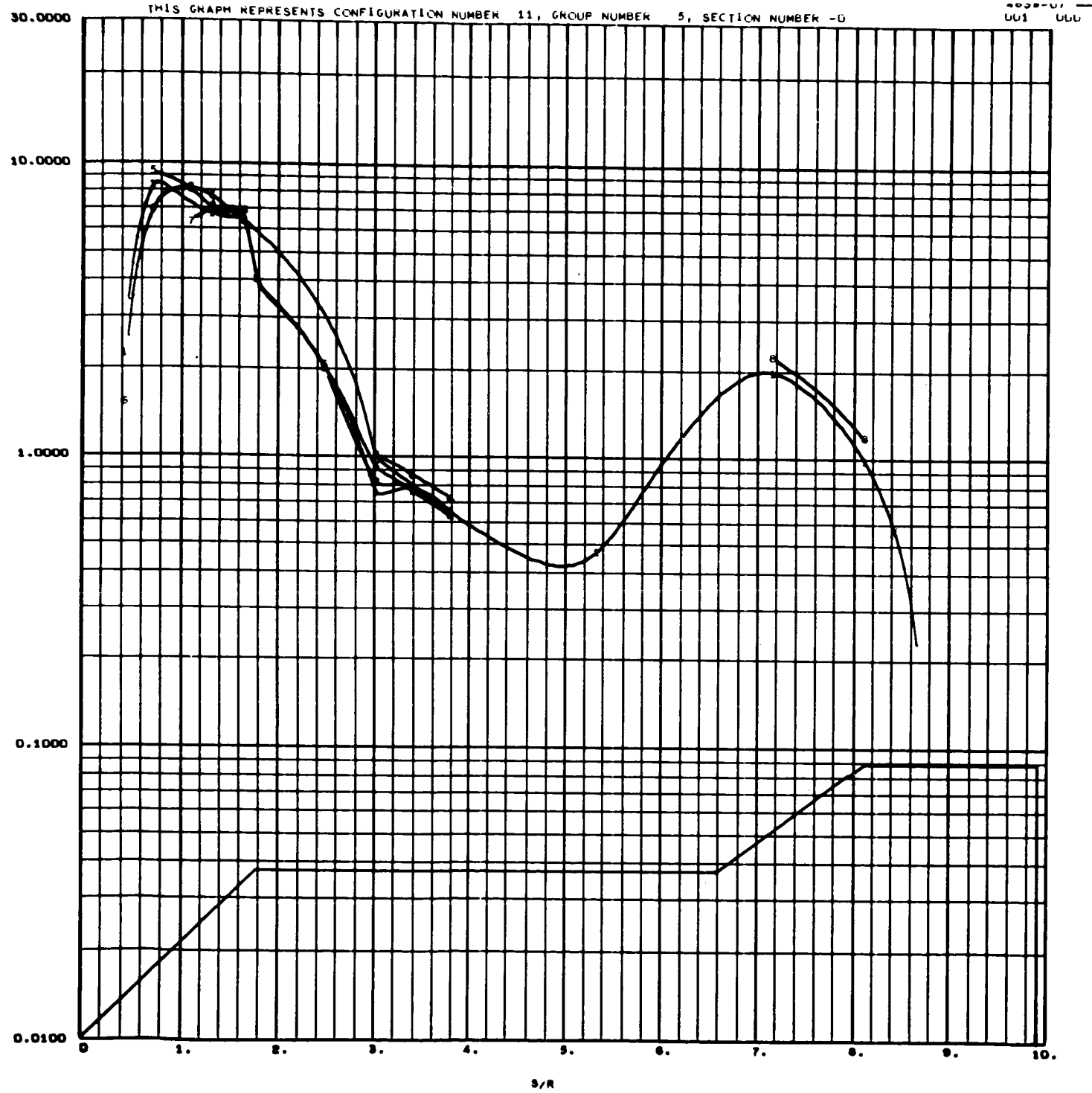
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 5
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1647.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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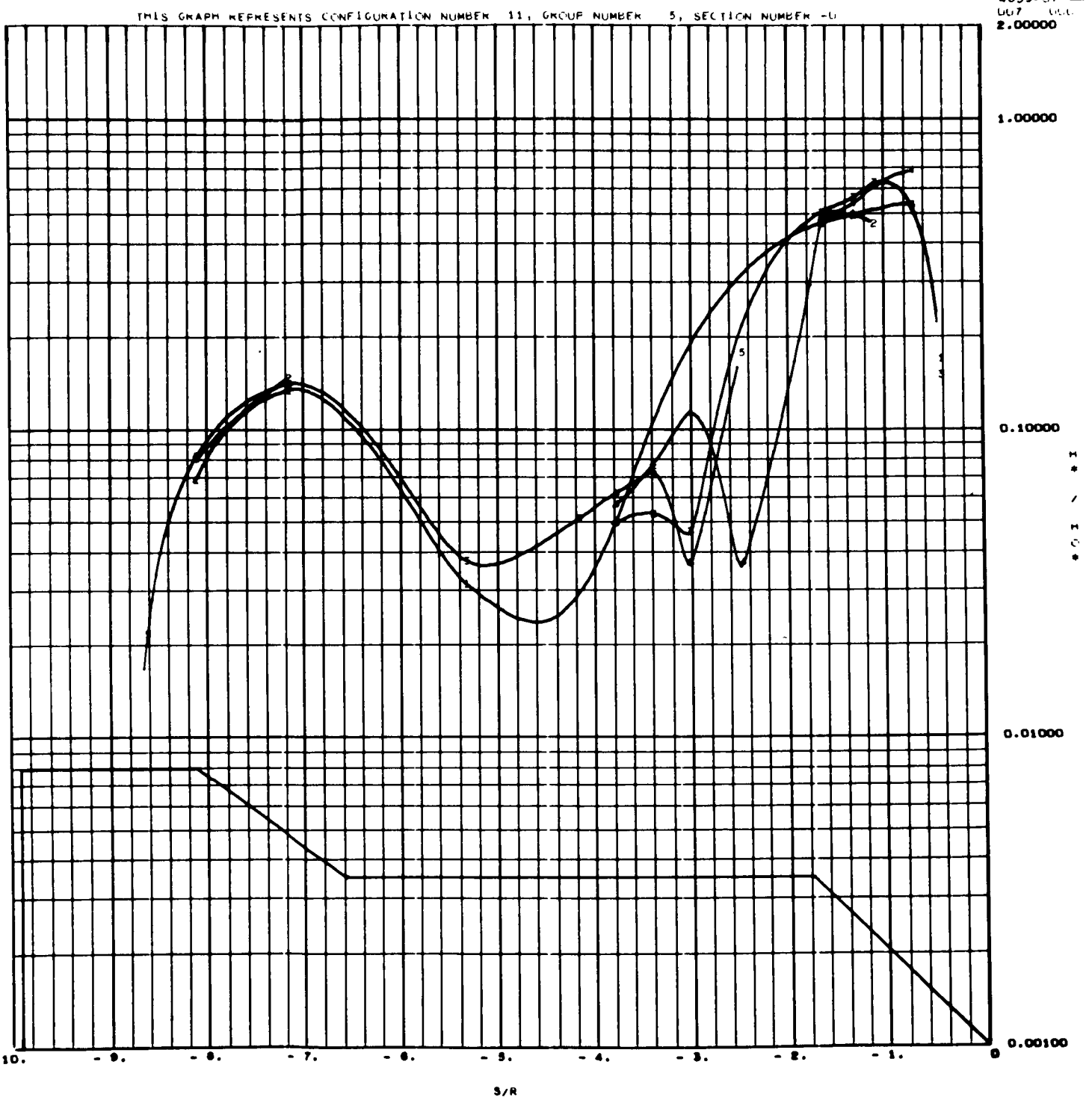
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 5
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1647.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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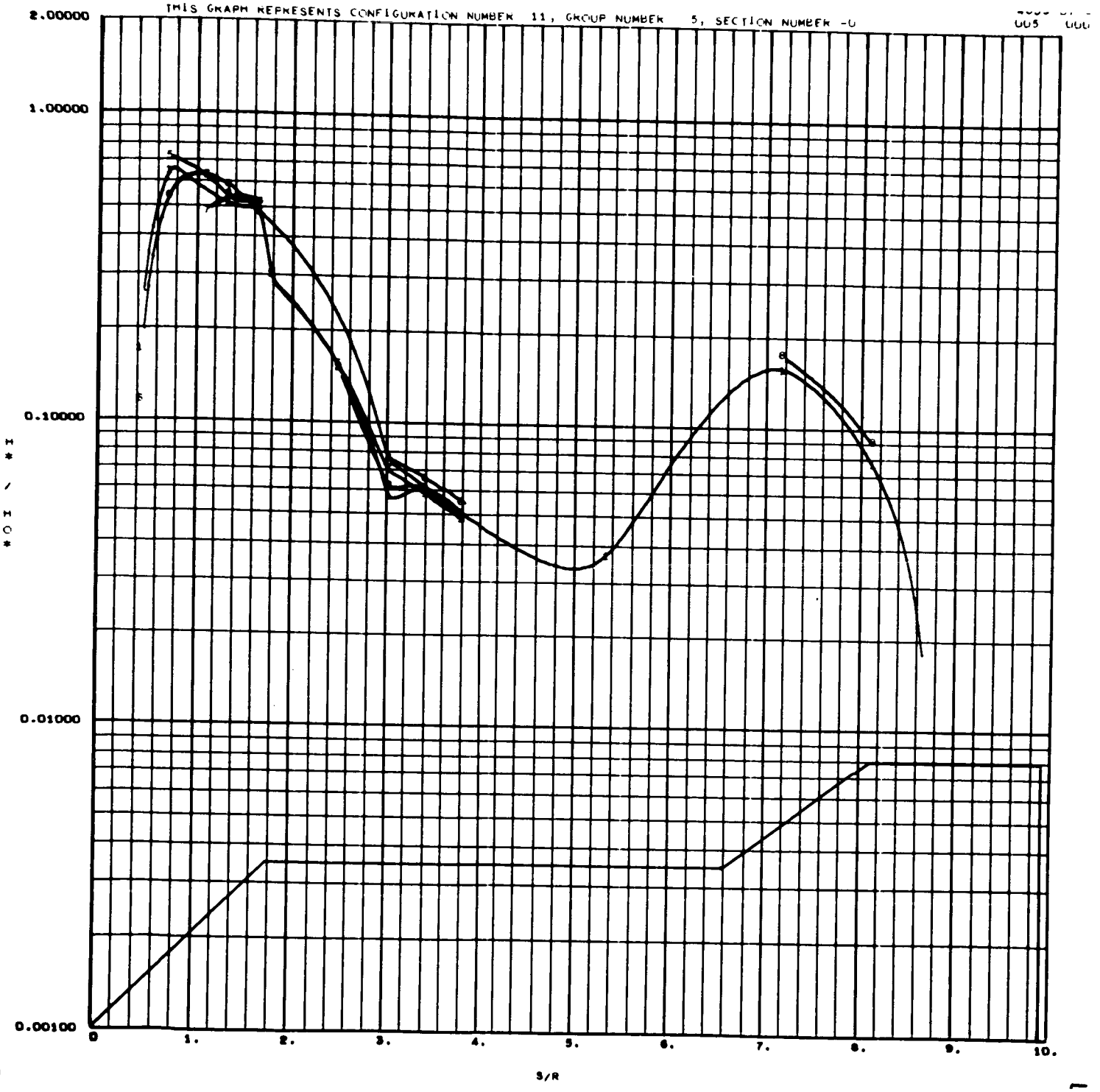
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 5
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1647.10 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

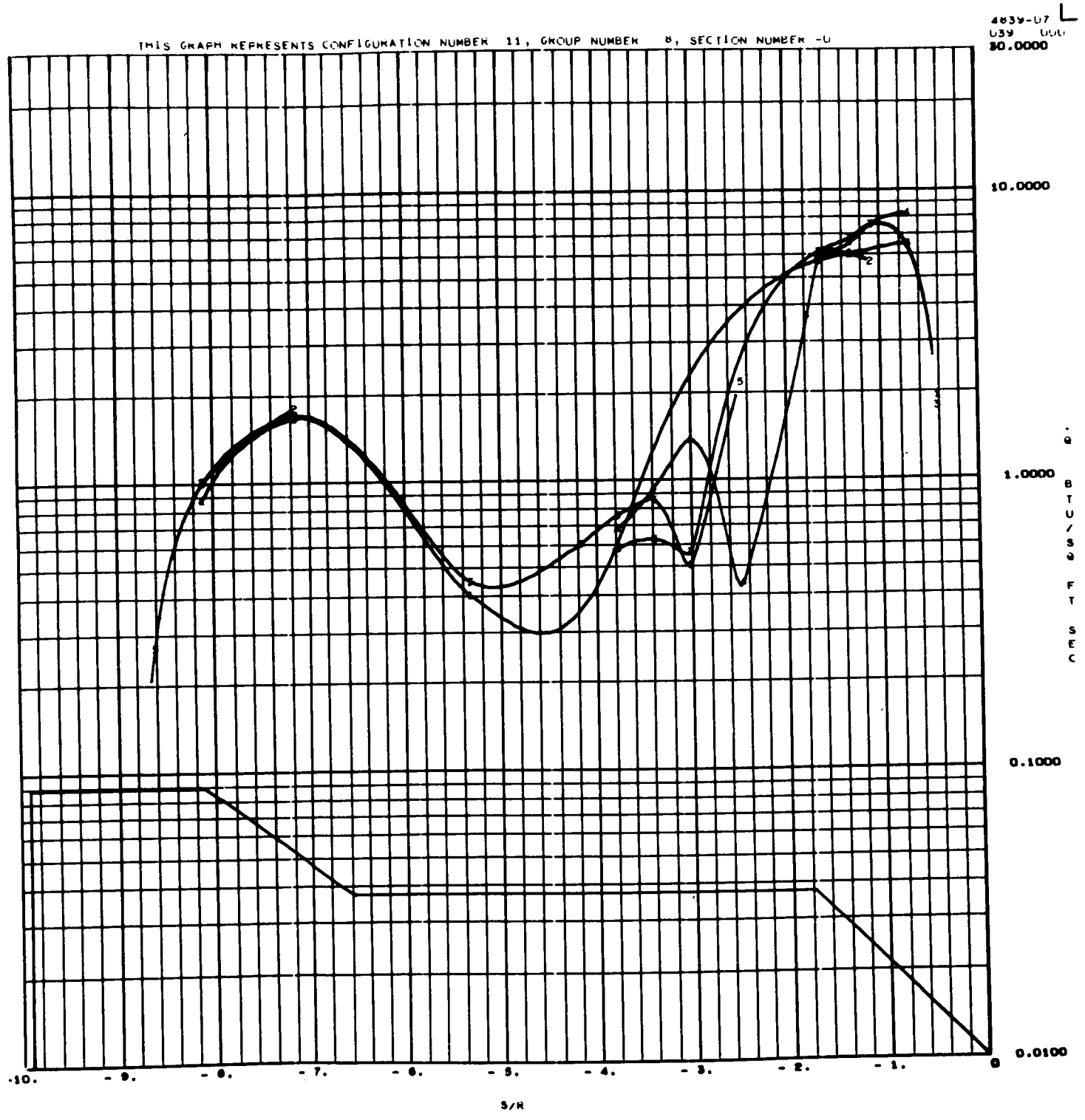
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 8
TOTAL PRESSURE 206.7 PSIA
REYNOLDS NUMBER PER INCH 0.0272 X 10^6
H_o* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.40 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

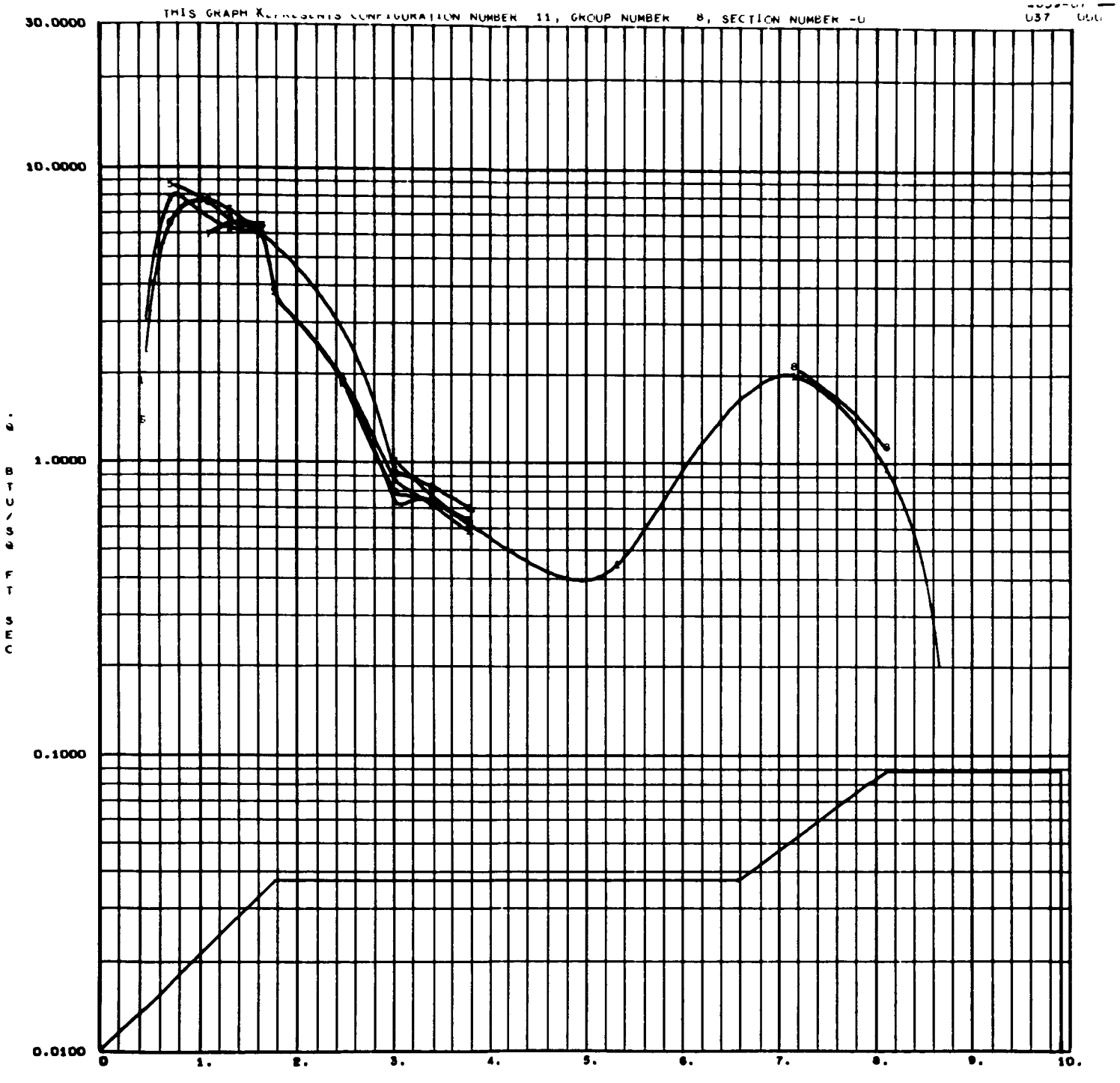
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 8
TOTAL PRESSURE 206.7 PSIA
REYNOLDS NUMBER PER INCH 0.0272 x 10^6
H_o* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.40 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

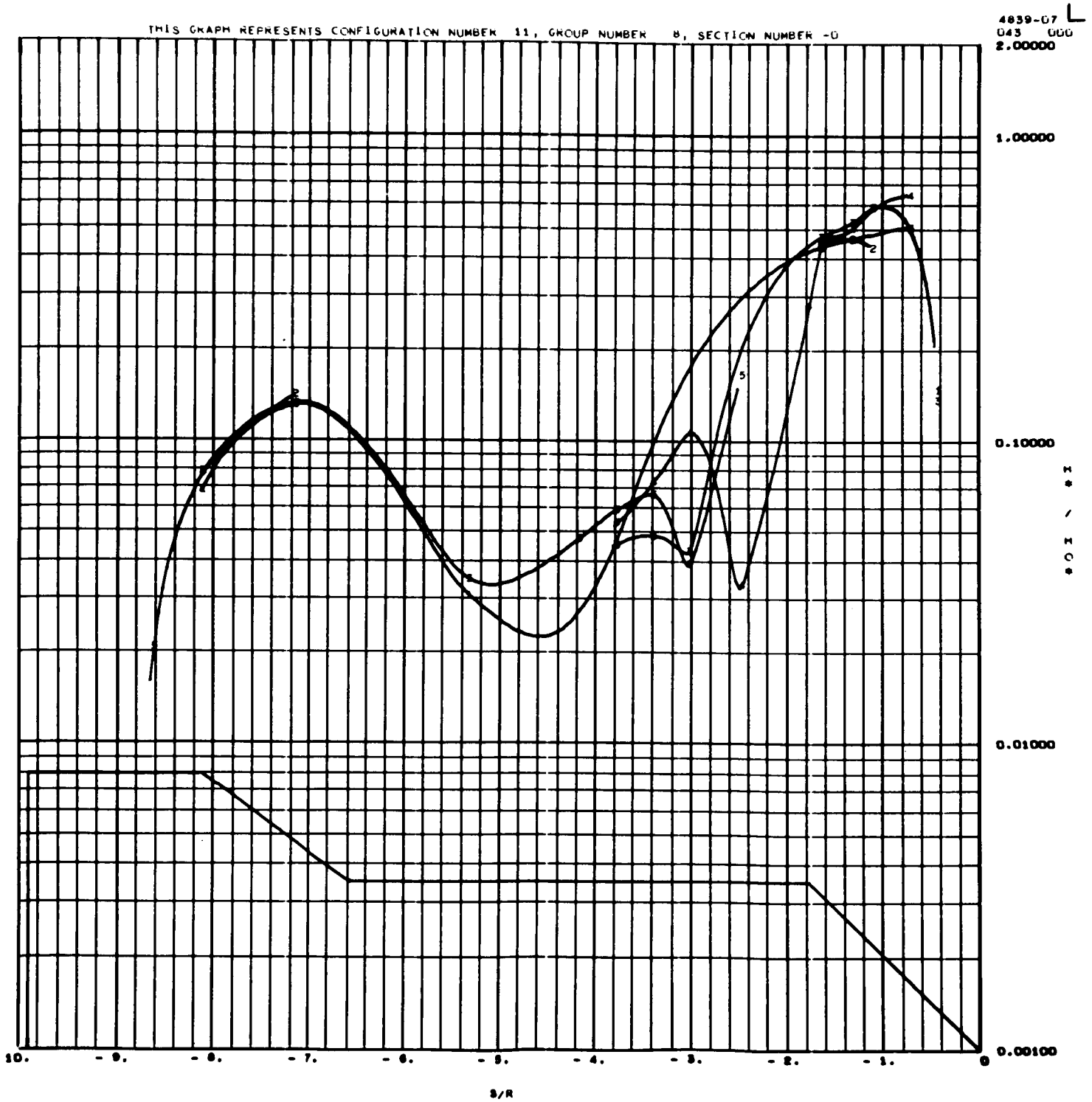
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 8
TOTAL PRESSURE 206.7 PSIA
REYNOLDS NUMBER PER INCH 0.0272 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.40 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

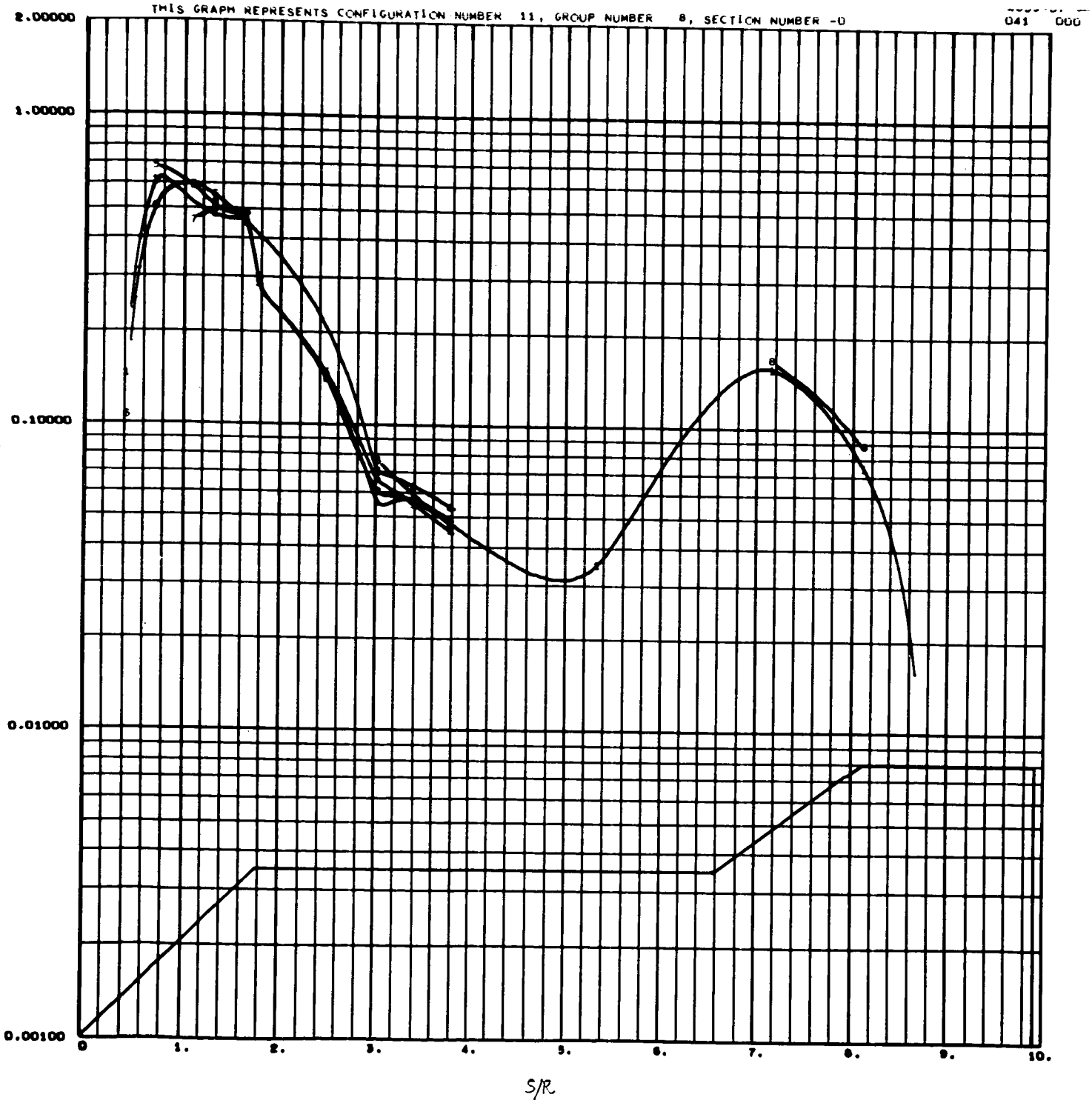
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 8
TOTAL PRESSURE 206.7 PSIA
REYNOLDS NUMBER PER INCH 0.0272 X 10^6
H_o * 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.40 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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[redacted]

HEAT TRANSFER TEST

APOLLO

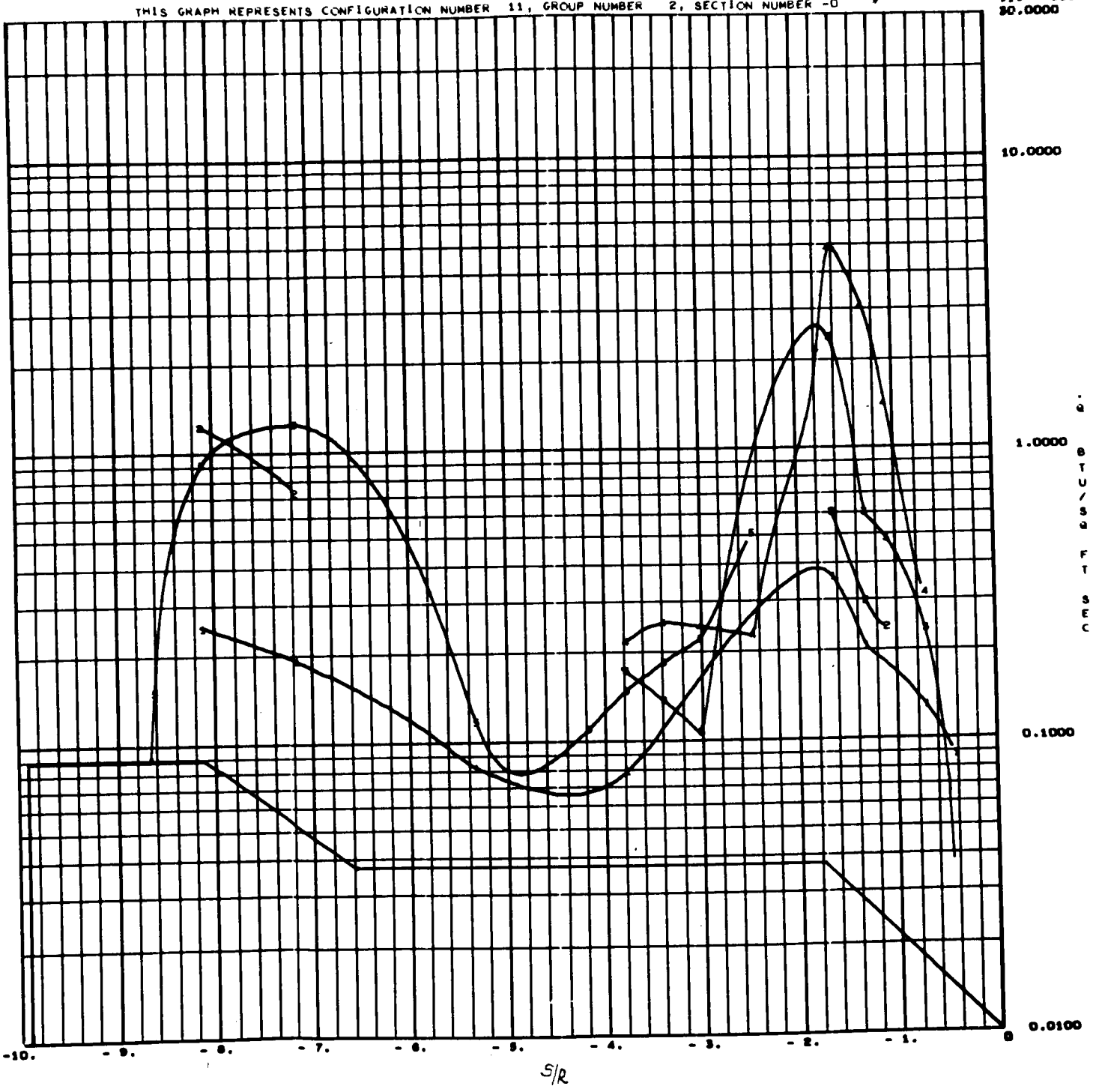
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 2
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0284 X 10^6
H_o * 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1649.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

4839-07 L
519 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 2, SECTION NUMBER -0



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

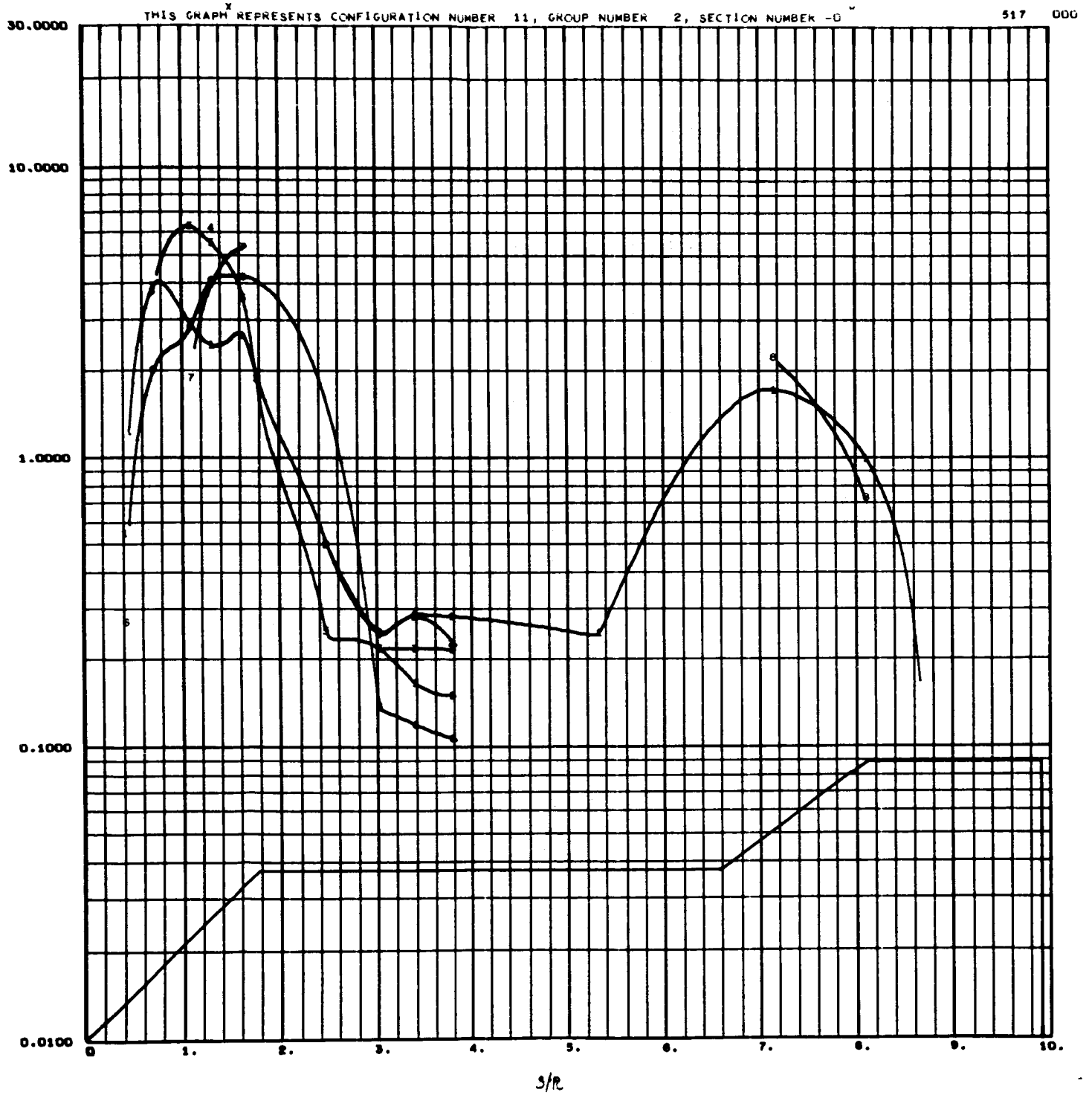
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 2
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0284 X 10^6
H_o* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1649.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 2, SECTION NUMBER -0

517 000



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CONFIDENTIAL

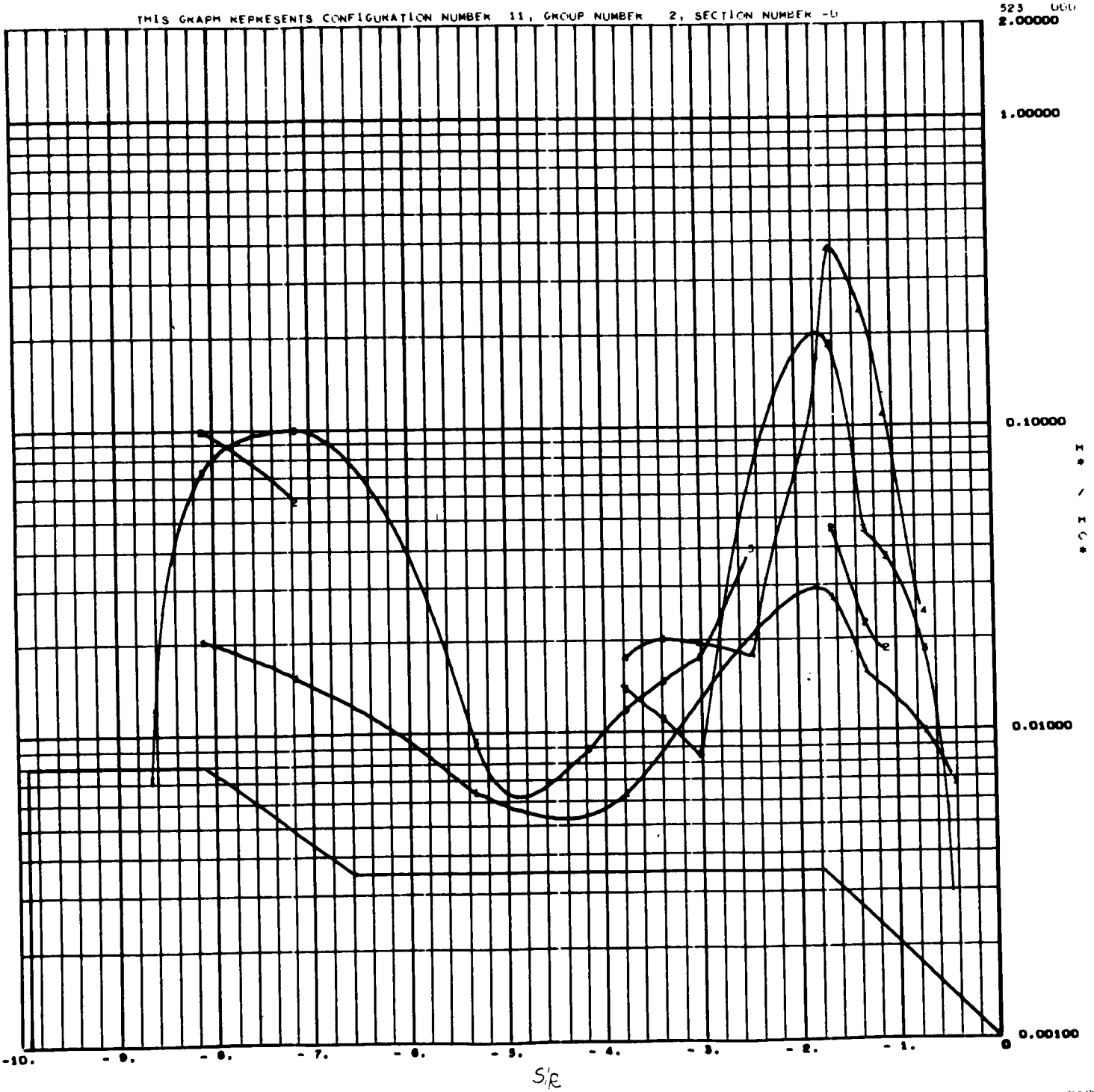
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 2
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0284 X 10^6
H_c^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1649.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



S/E

CONFIDENTIAL

[redacted]

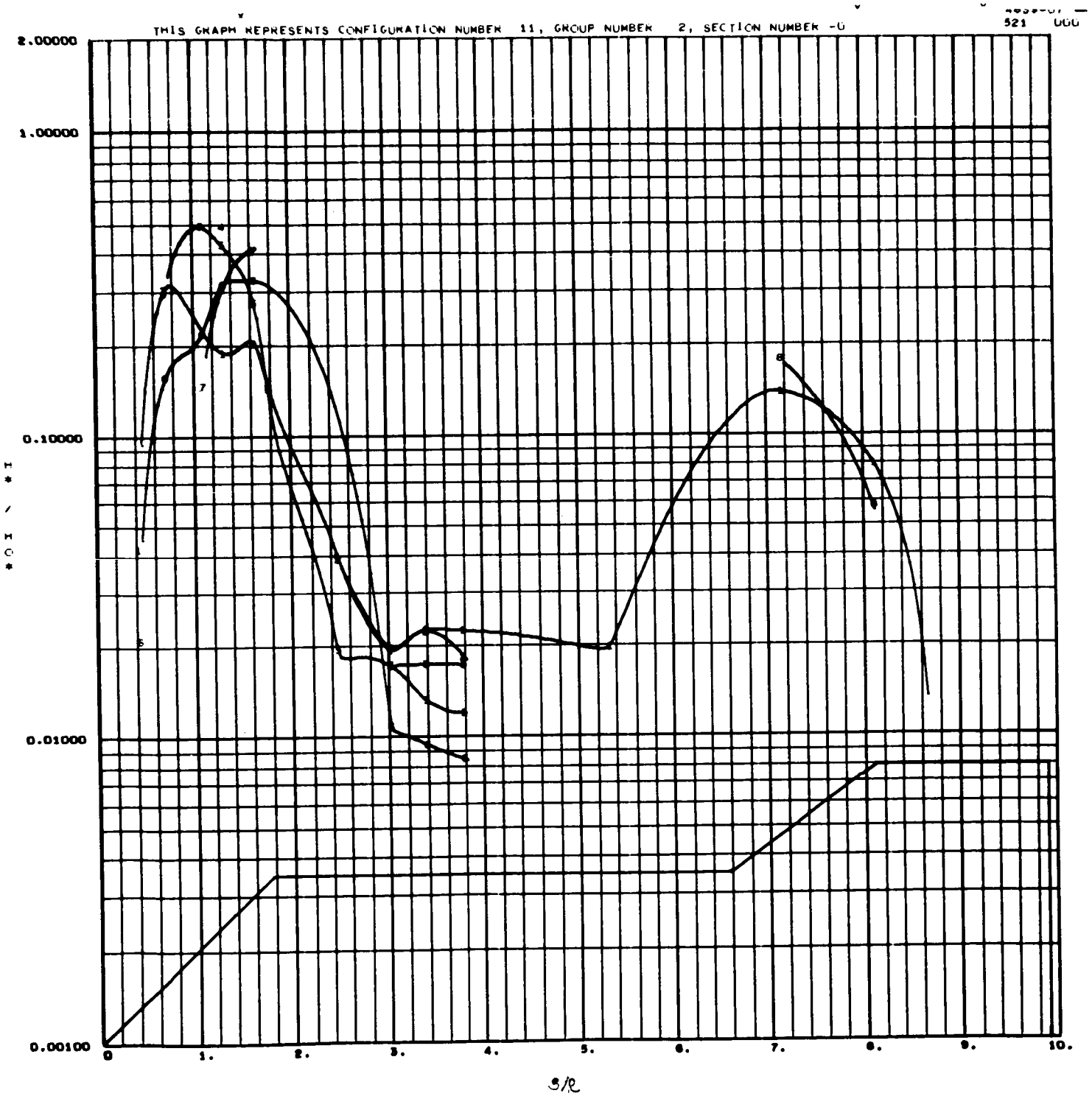
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 2
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0284 X 10^6
H_o * 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1649.30 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



S/R

[redacted]

~~CONFIDENTIAL~~

HEAT TRANSFER TEST

APOLLO

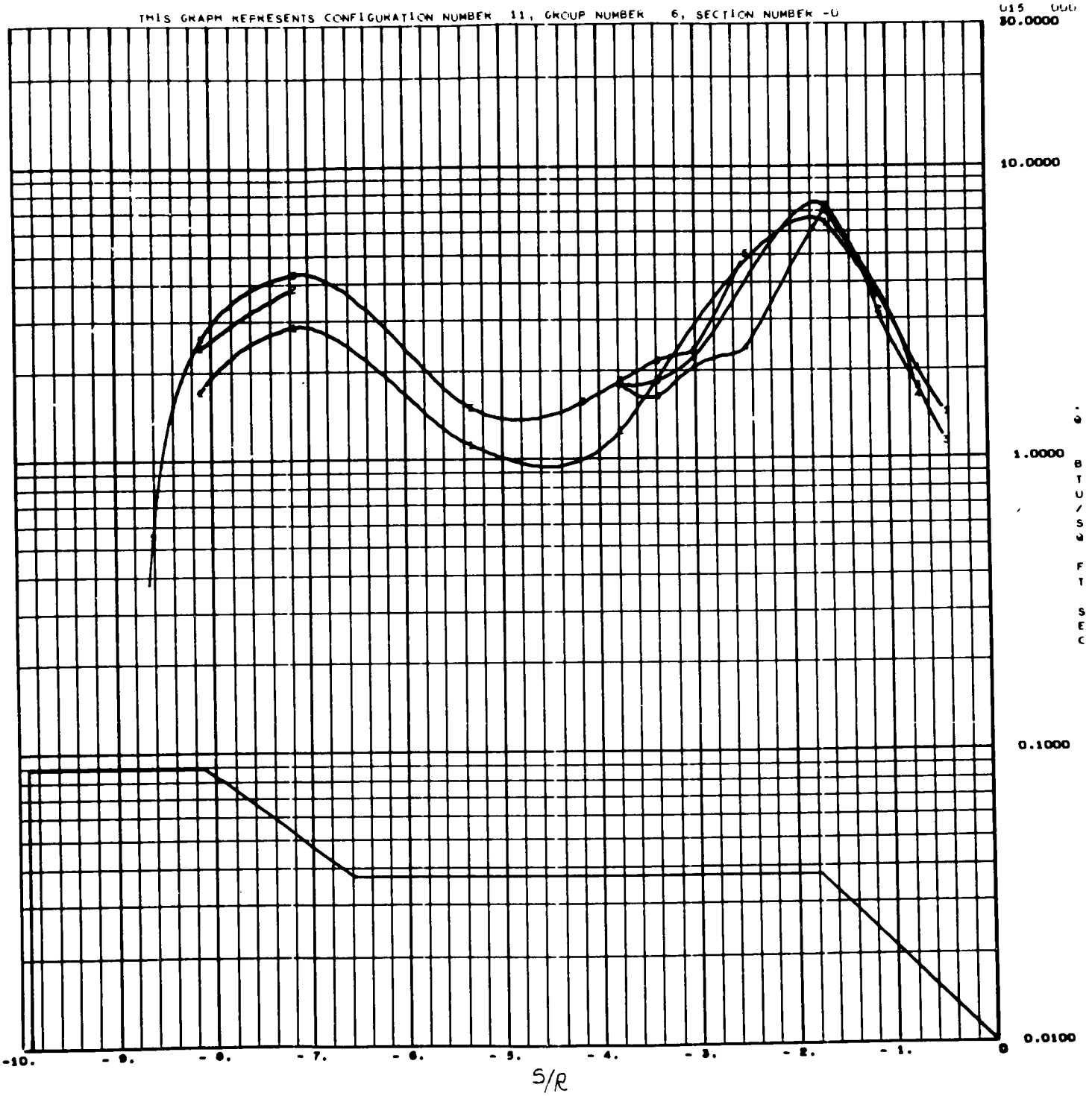
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 6
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1643.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

4839-07 L
015 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 6, SECTION NUMBER -0



~~CONFIDENTIAL~~

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HEAT TRANSFER TEST

APOLLO

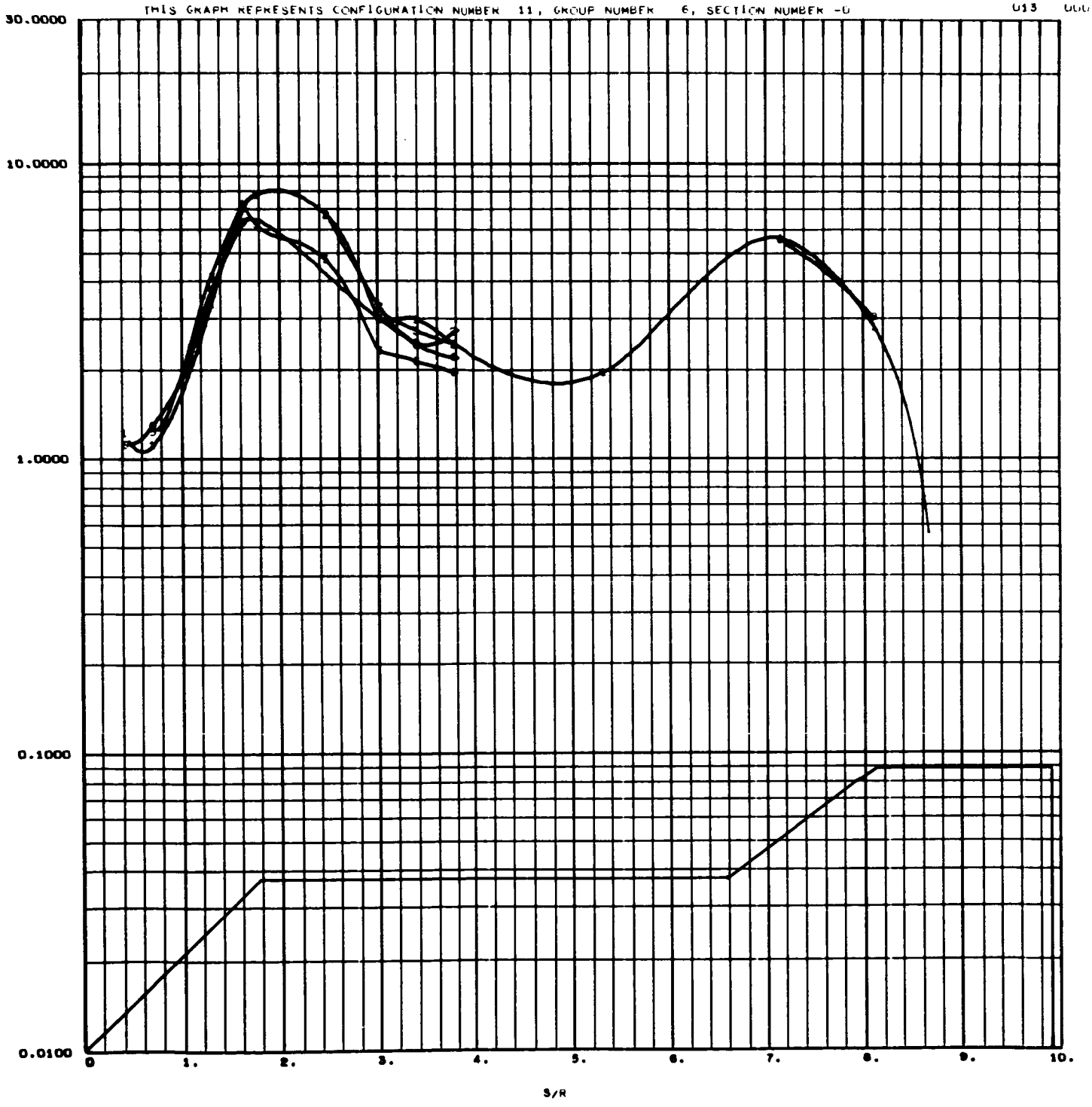
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 6
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1643.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8

4839-07 L
013 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 6, SECTION NUMBER -0



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[redacted]

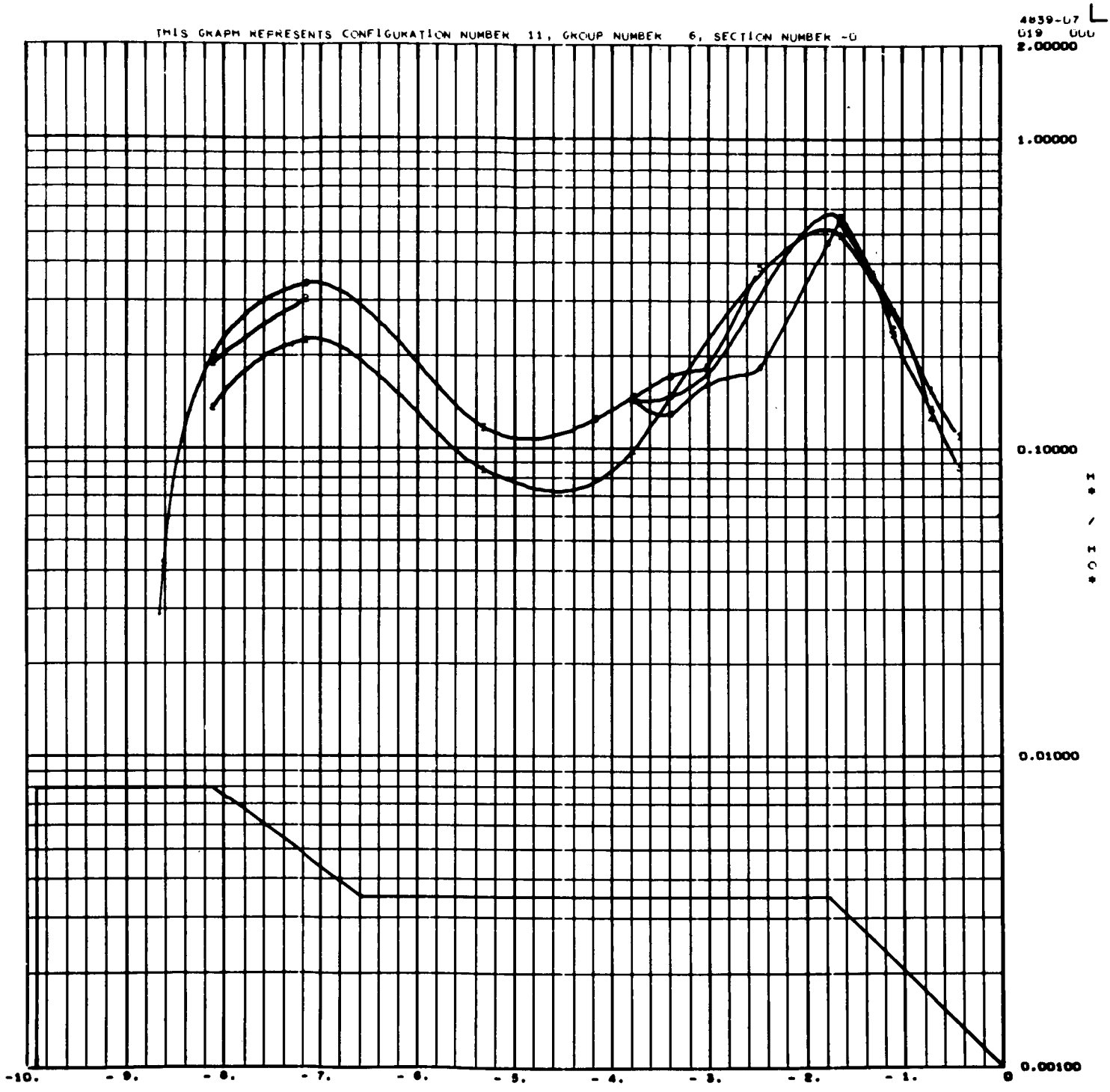
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 6
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
M_O^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1643.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



S/R

[redacted]

[redacted]

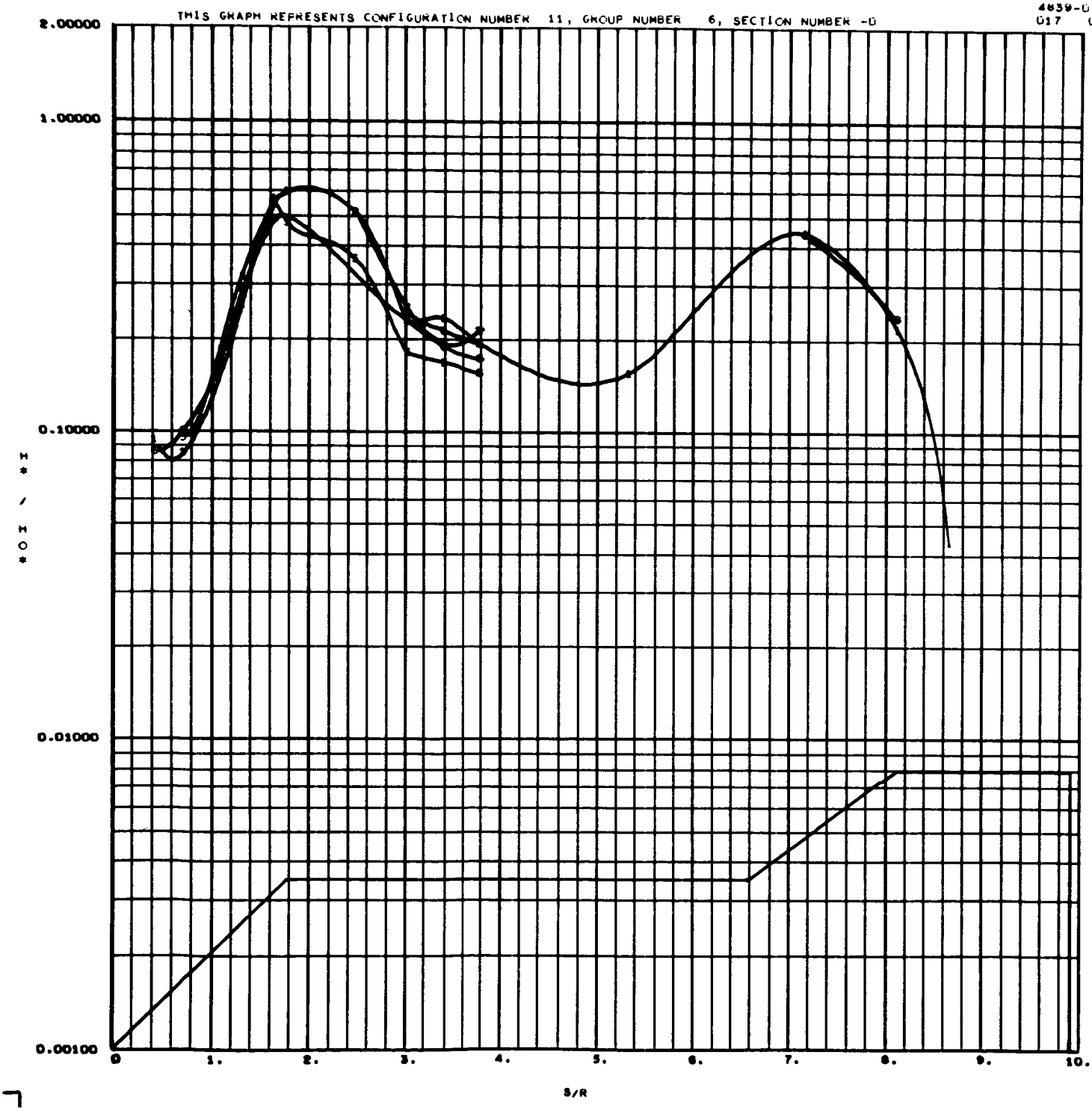
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 6
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1643.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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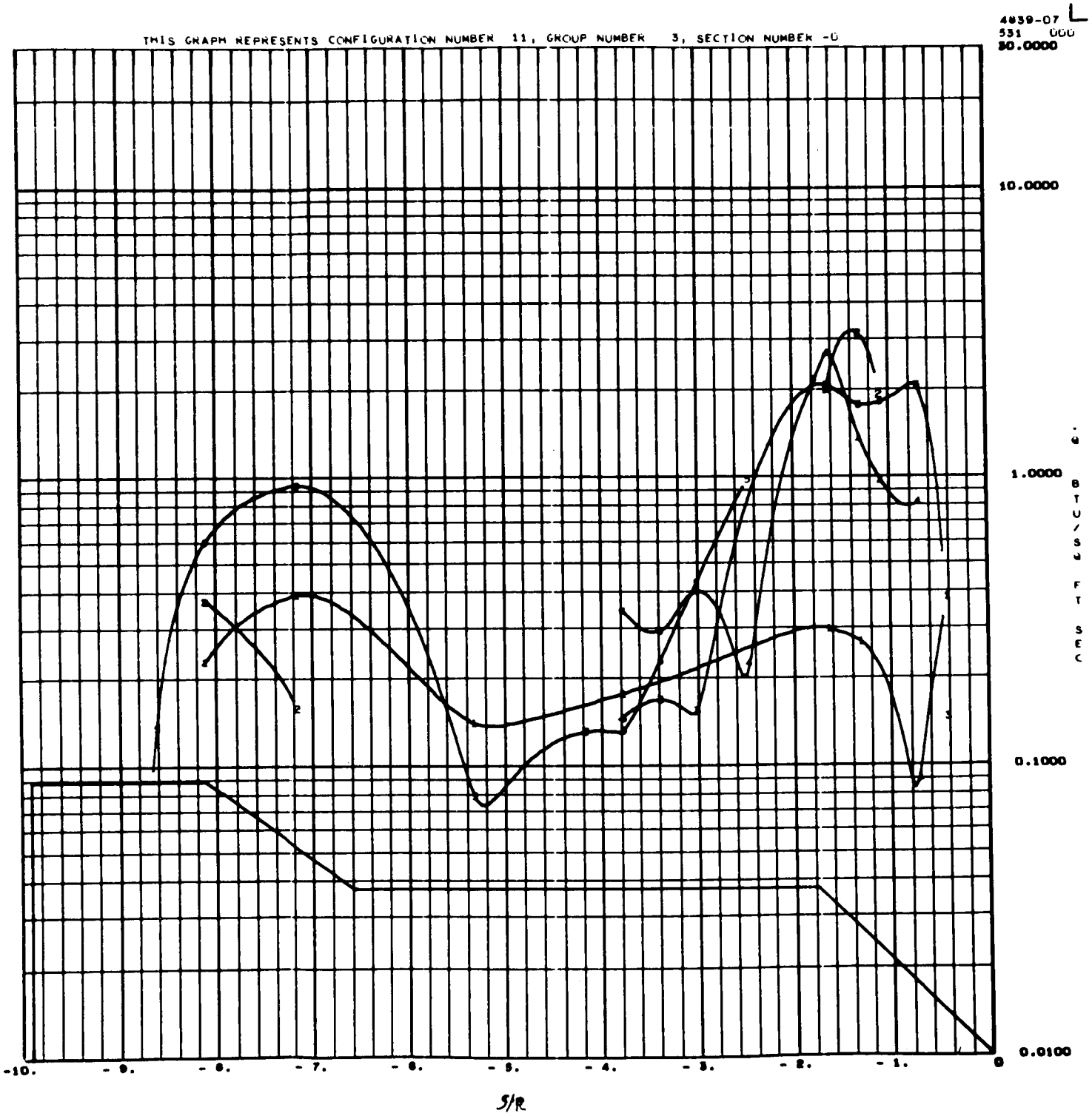
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 3
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_C^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1645.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

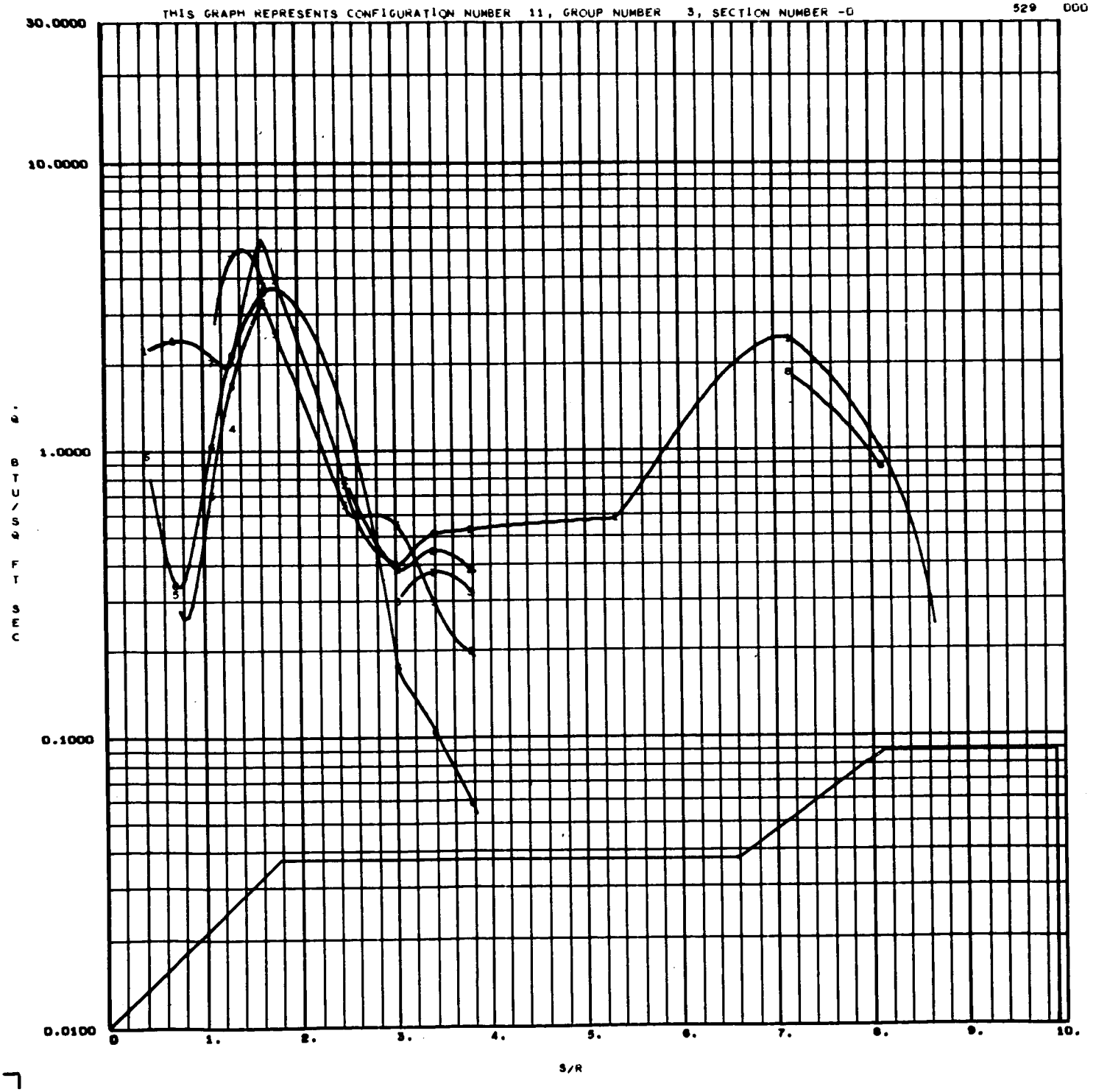
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 3
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8

529 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 3, SECTION NUMBER -0



[redacted]

[redacted]

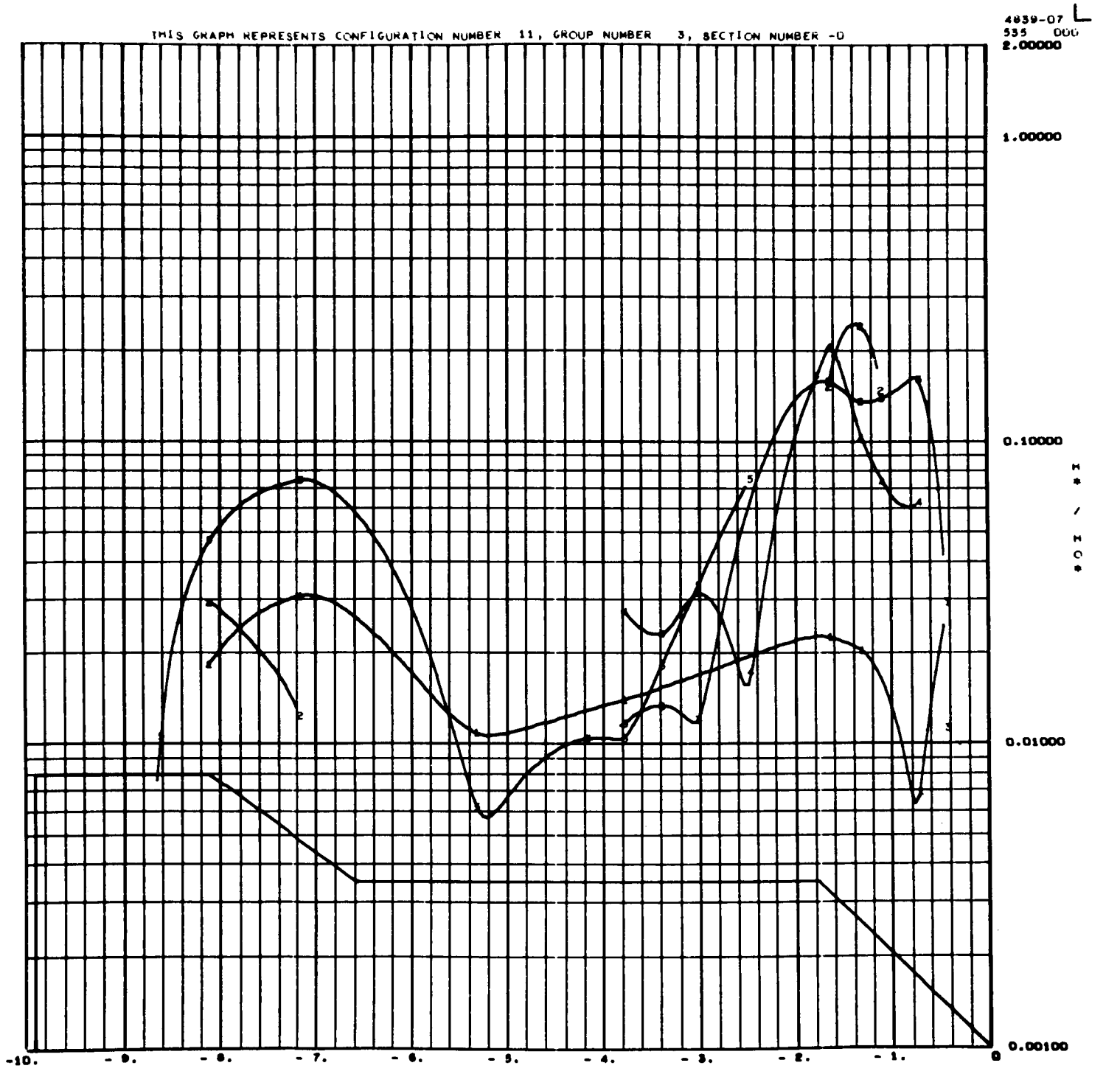
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 3
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1645.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



S/R

[redacted]

[redacted]

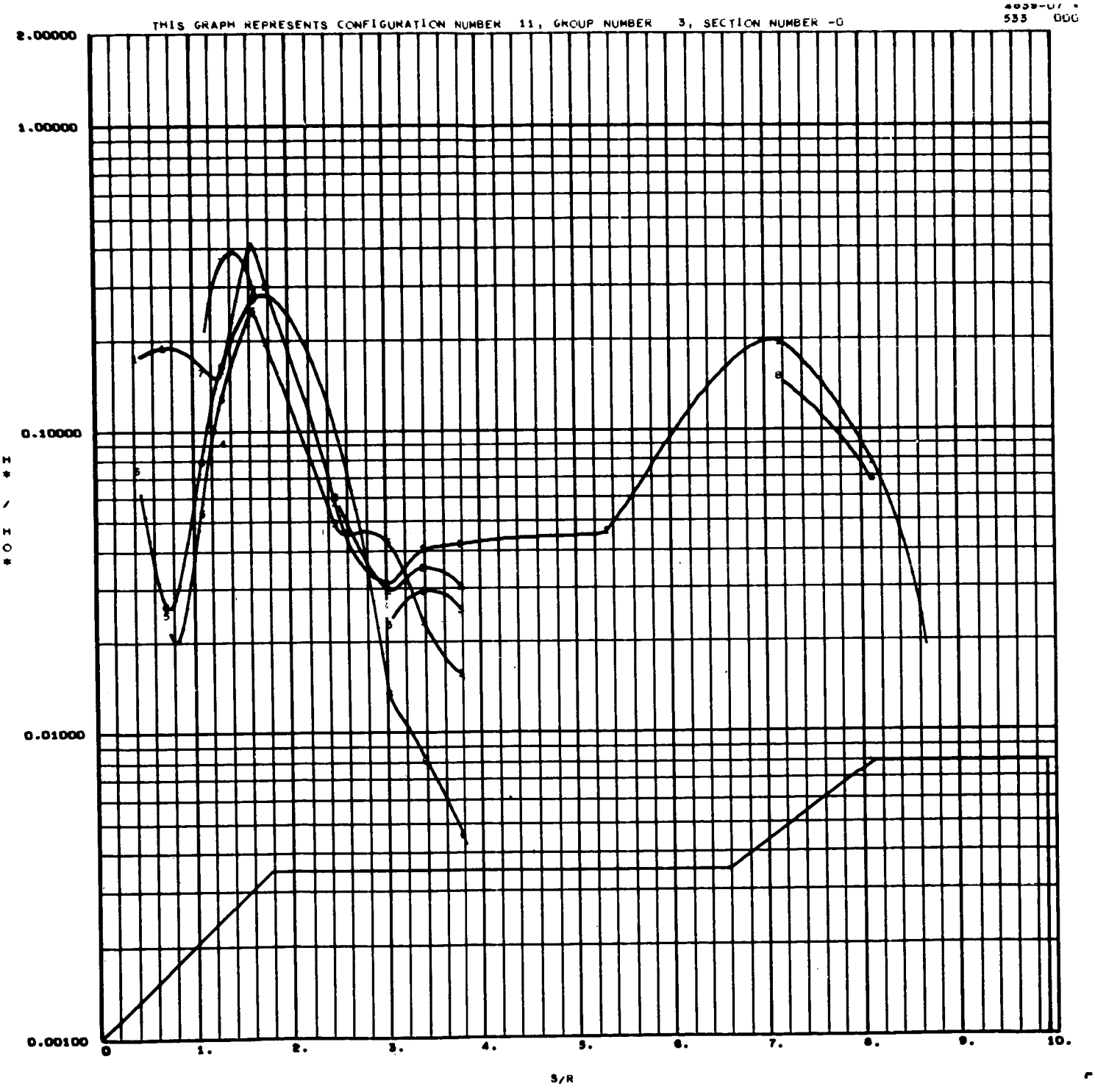
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 3
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1645.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

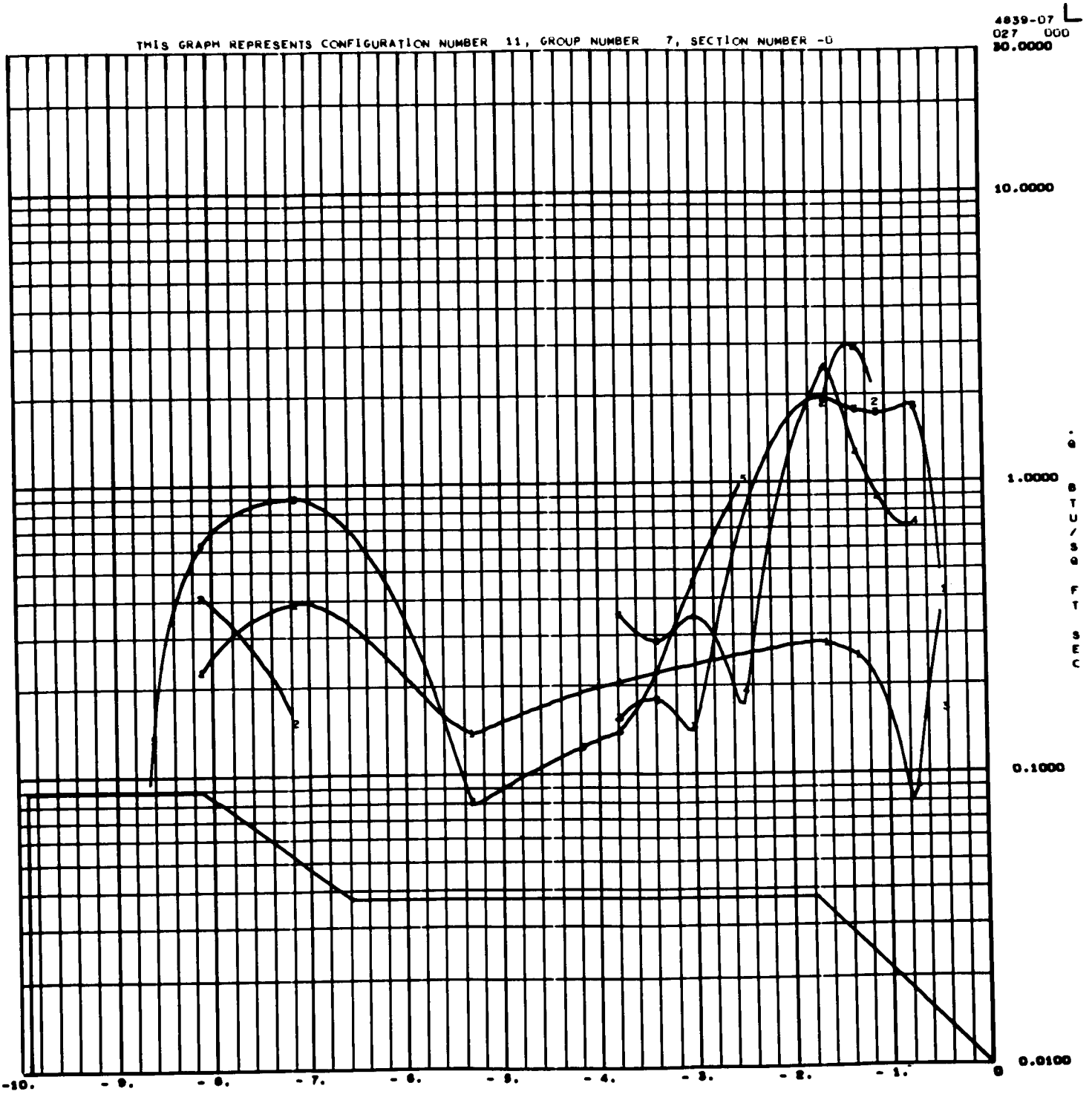
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 7
TOTAL PRESSURE 209.0 PSIA
REYNOLDS NUMBER PER INCH 0.0274 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1648.60 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

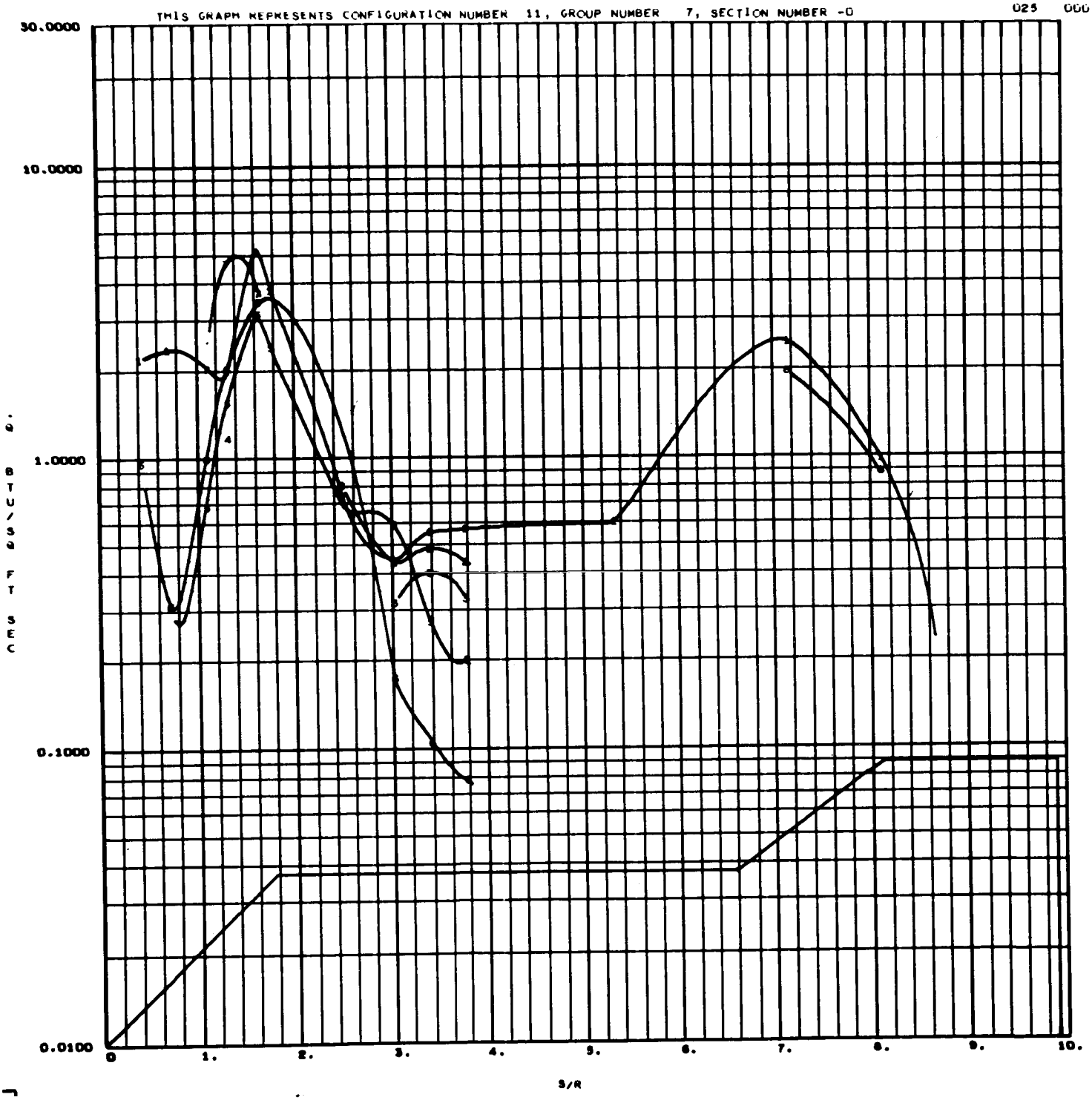
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 7
TOTAL PRESSURE 209.0 PSIA
REYNOLDS NUMBER PER INCH 0.0274 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1648.60 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

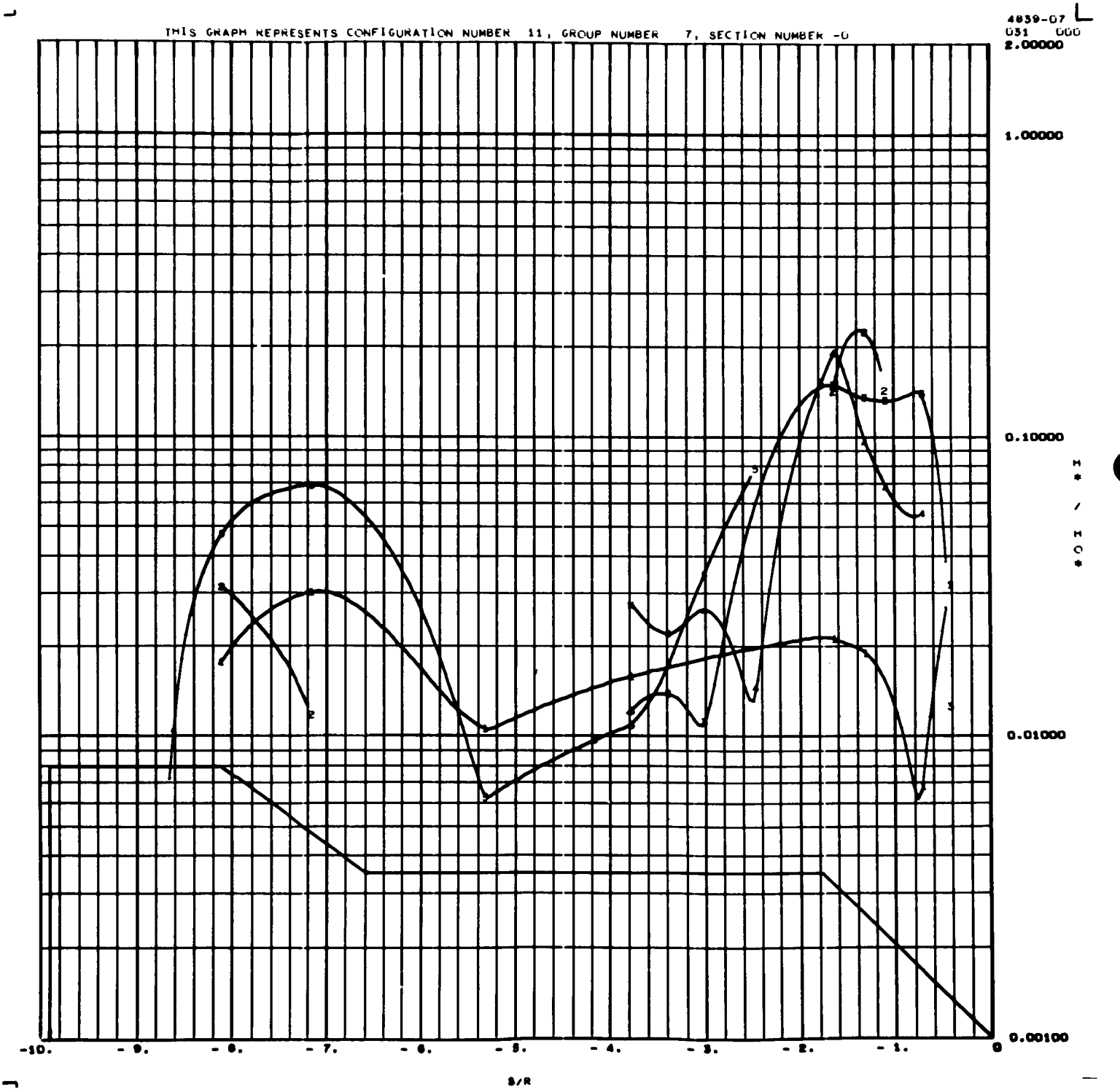
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 7
TOTAL PRESSURE 209.0 PSIA
REYNOLDS NUMBER PER INCH 0.0274 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1648.60 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

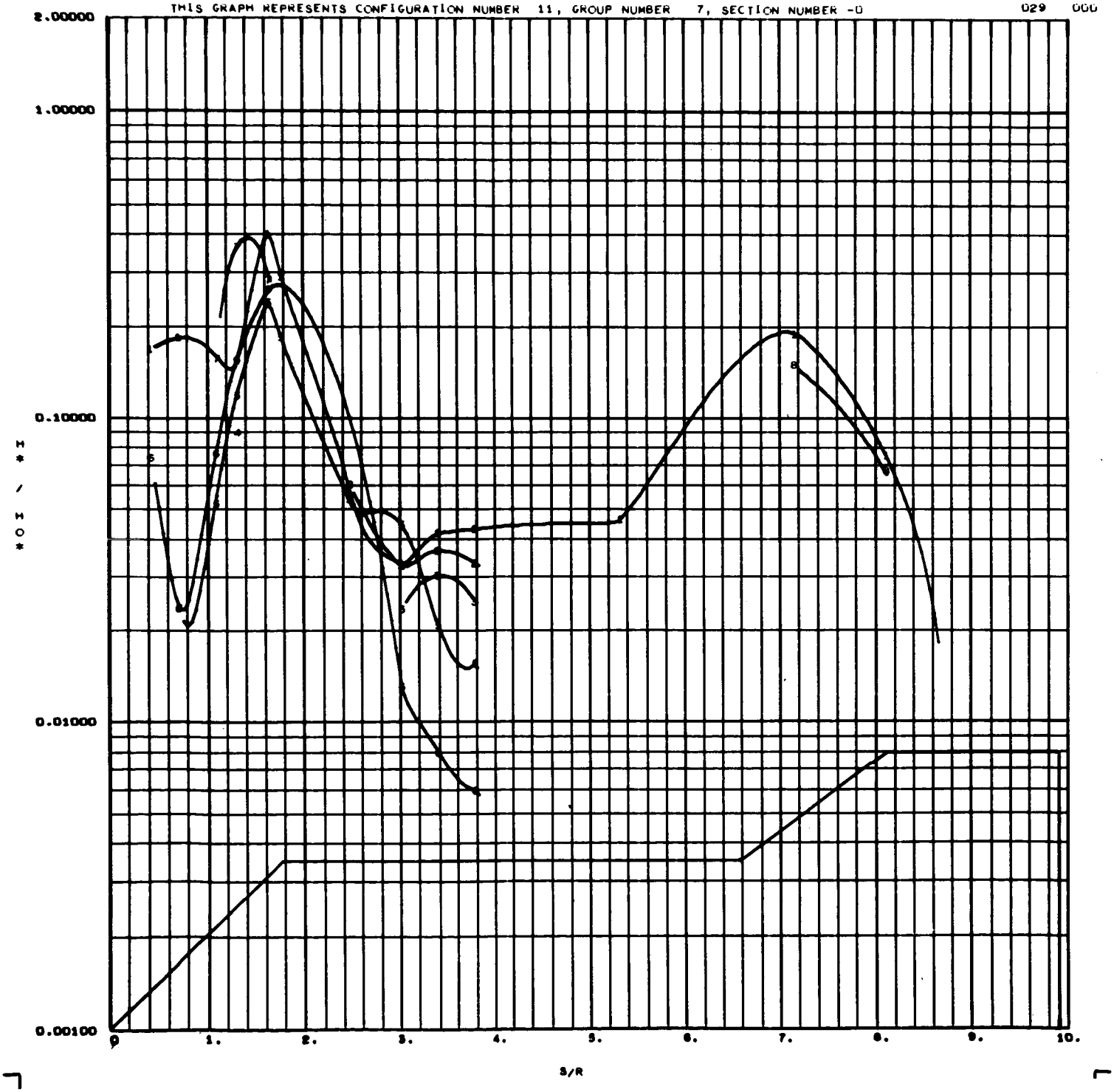
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 7
TOTAL PRESSURE 209.0 PSIA
REYNOLDS NUMBER PER INCH 0.0274 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1648.60 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

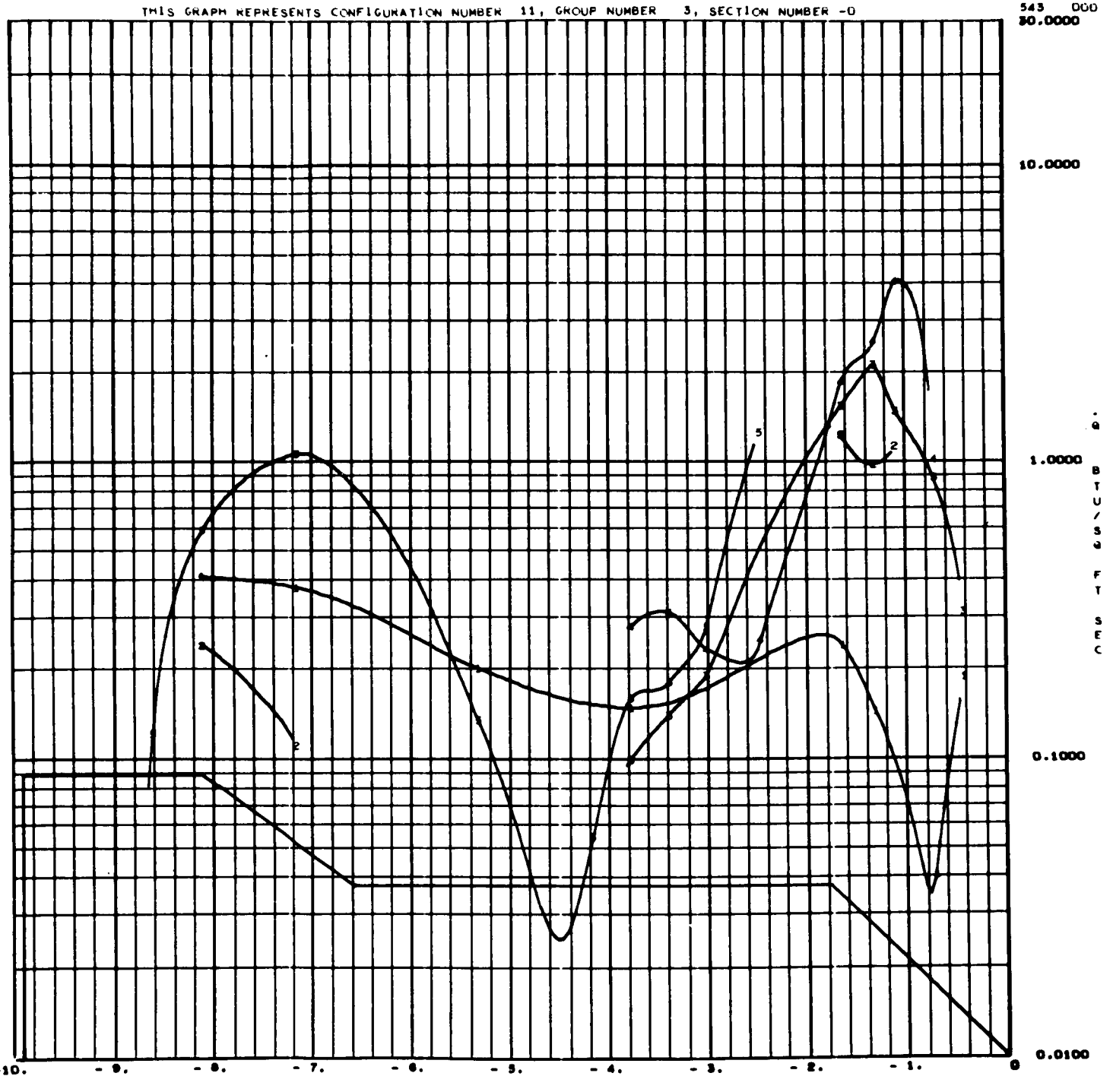
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. #4
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1643.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

4839-07 L
543 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 3, SECTION NUMBER -0



[redacted]

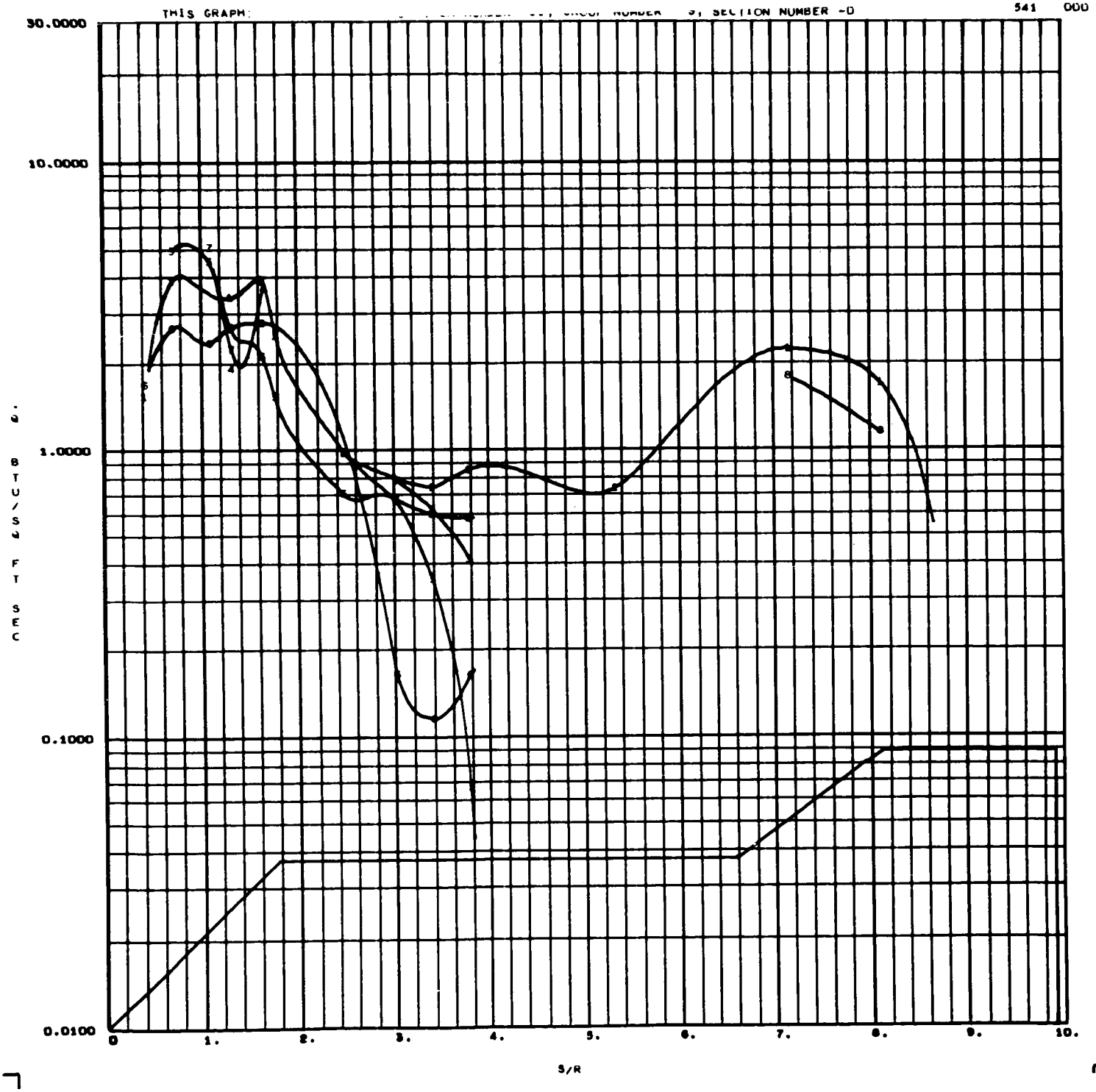
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. [redacted]
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1643.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

HEAT TRANSFER TEST

APOLLO

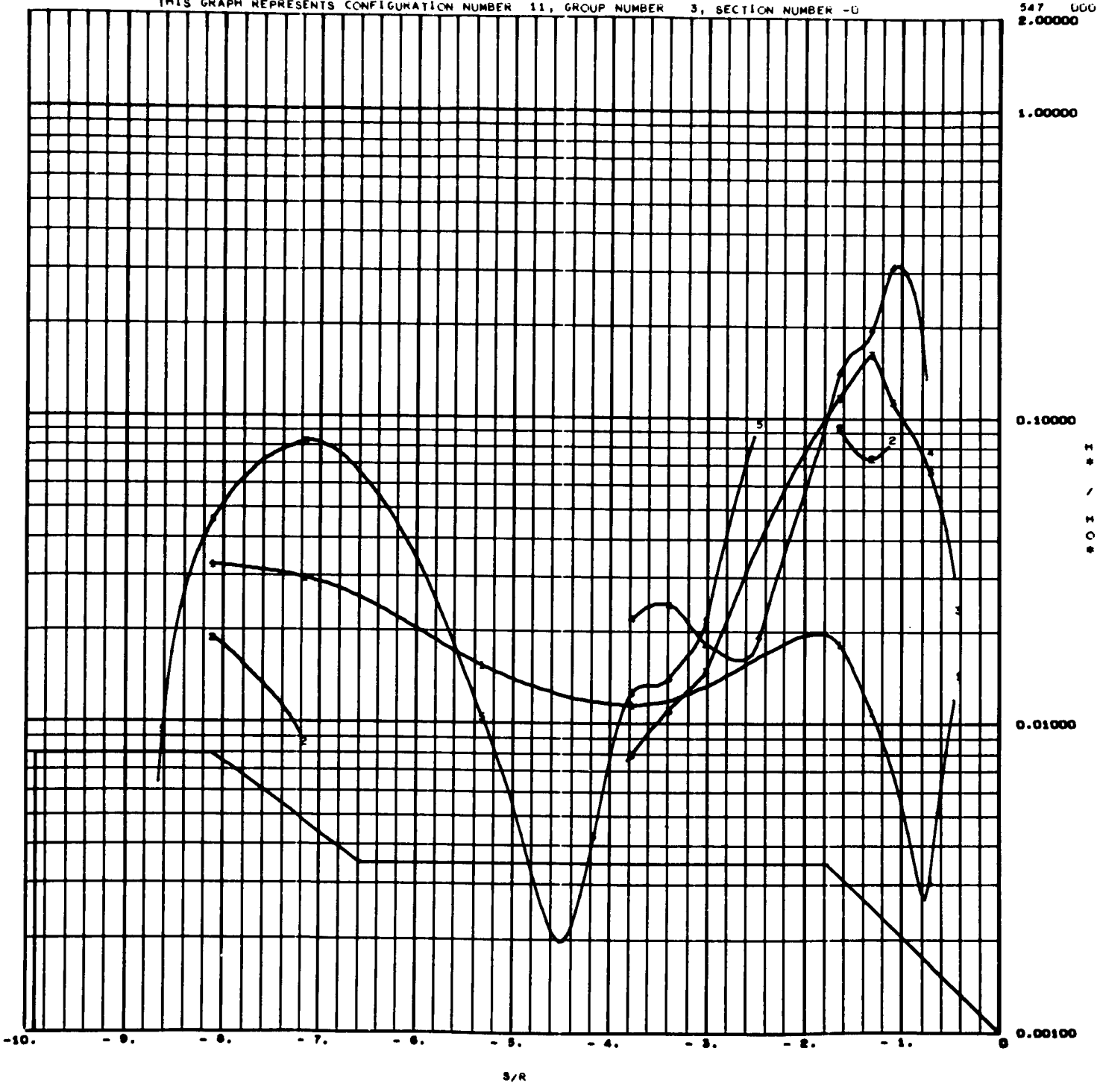
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. #4
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1643.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 3, SECTION NUMBER -0

4839-07 L
547 000



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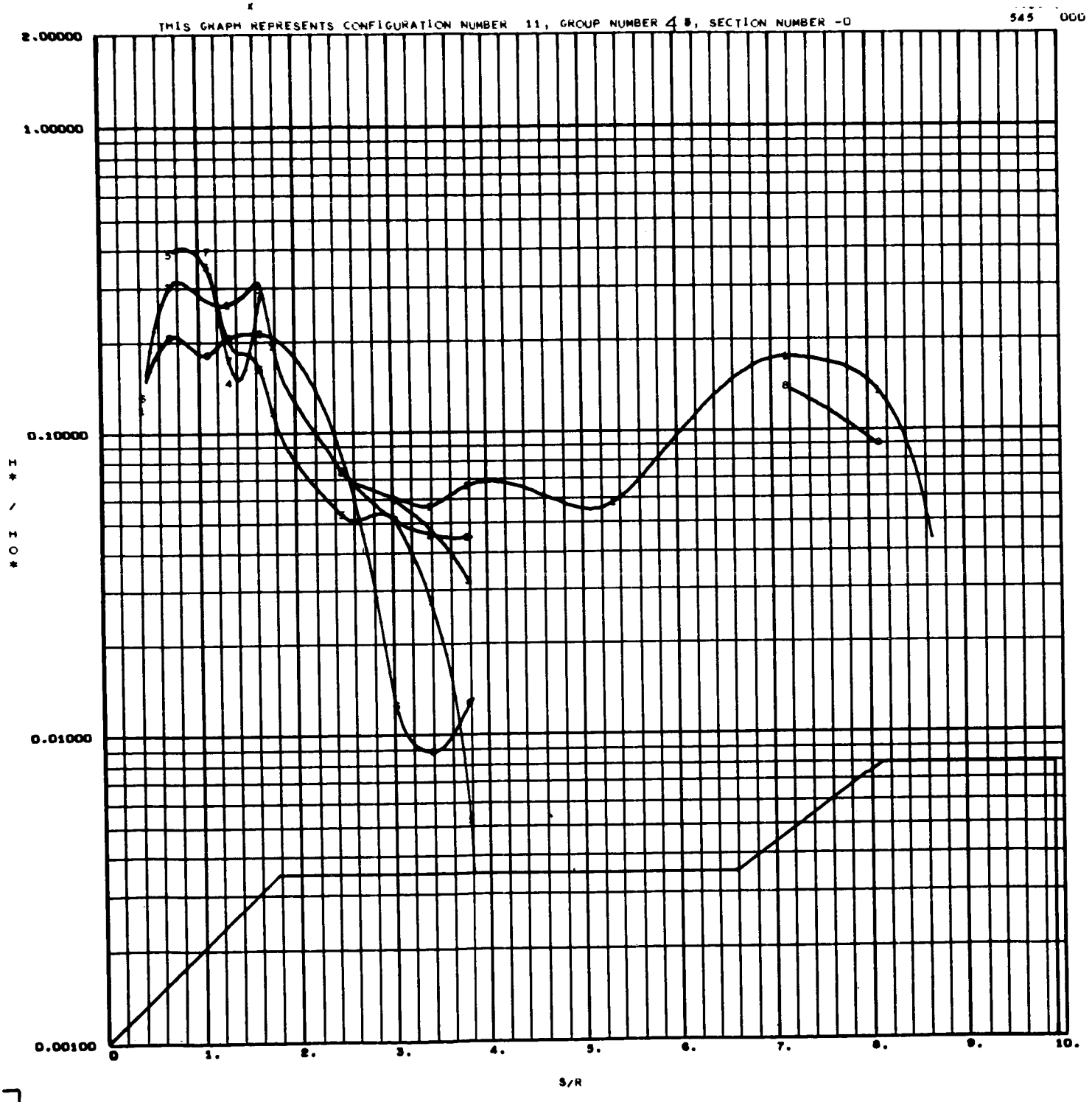
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. # 4
TOTAL PRESSURE 217.5 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1643.30 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



CONFIDENTIAL

[redacted]

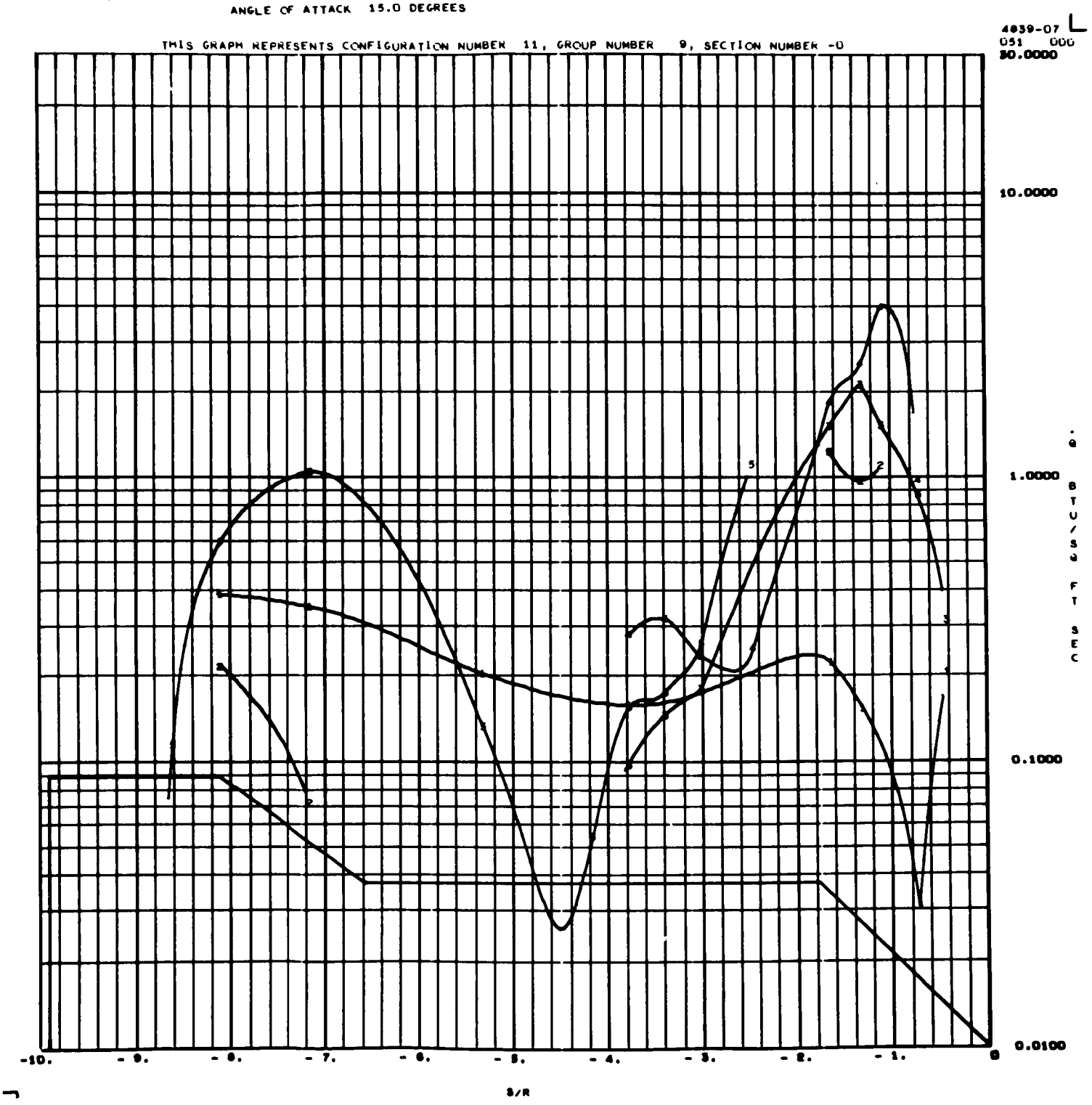
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 9
TOTAL PRESSURE 212.7 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_C^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1639.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

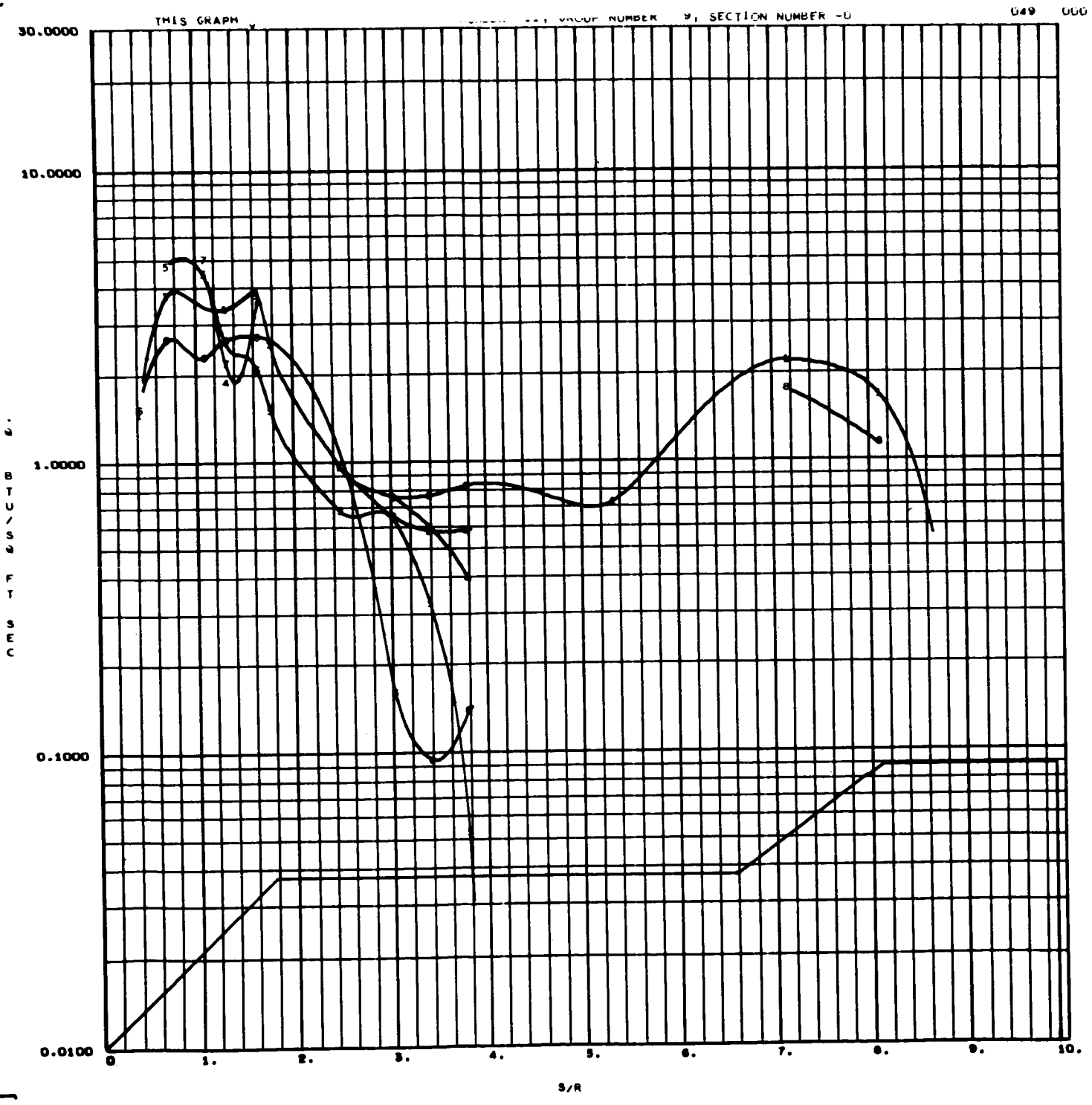
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 9
TOTAL PRESSURE 212.7 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1639.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

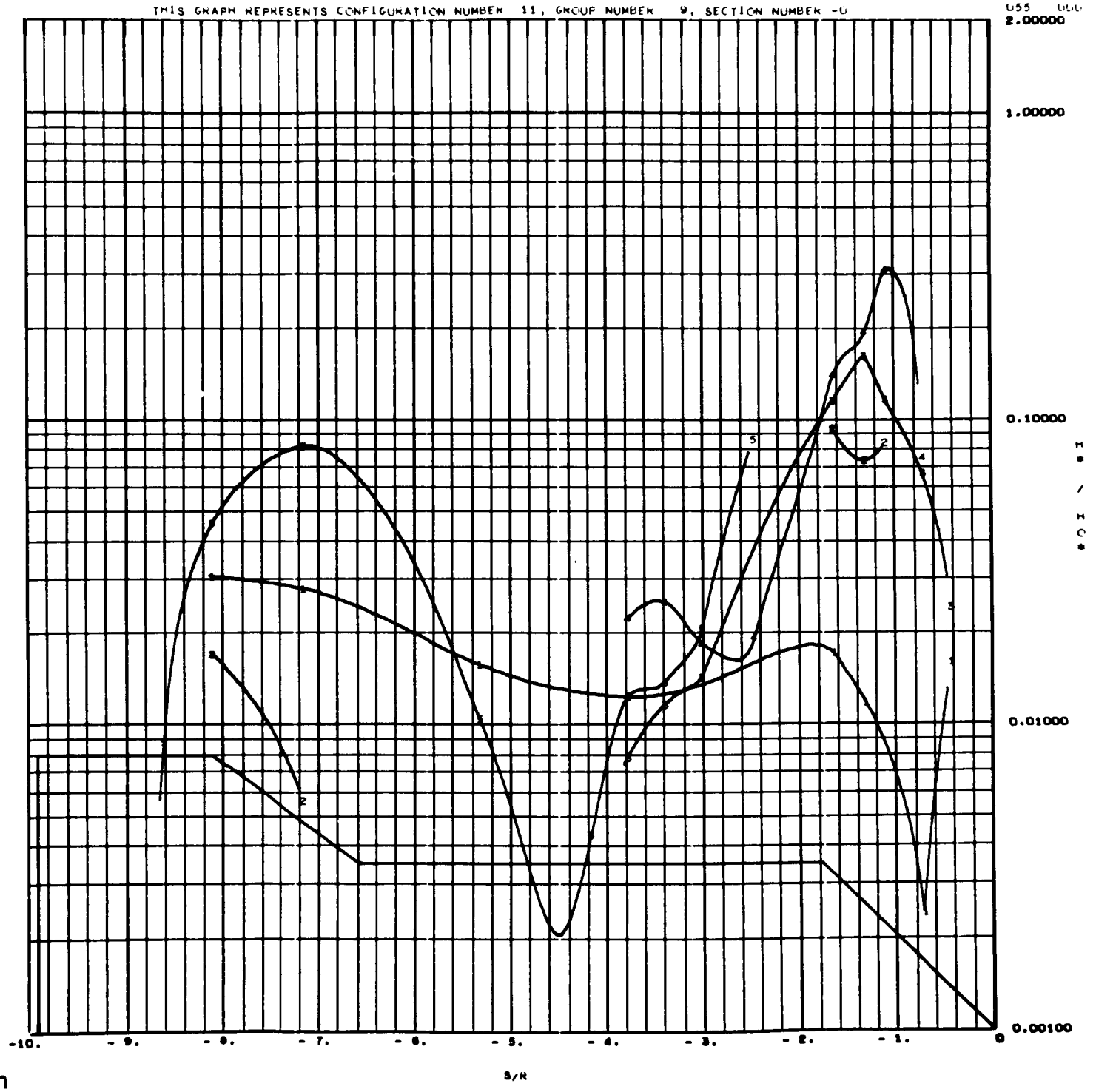
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 9
TOTAL PRESSURE 212.7 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1639.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 9, SECTION NUMBER -0

4839-07
055 000



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[redacted]

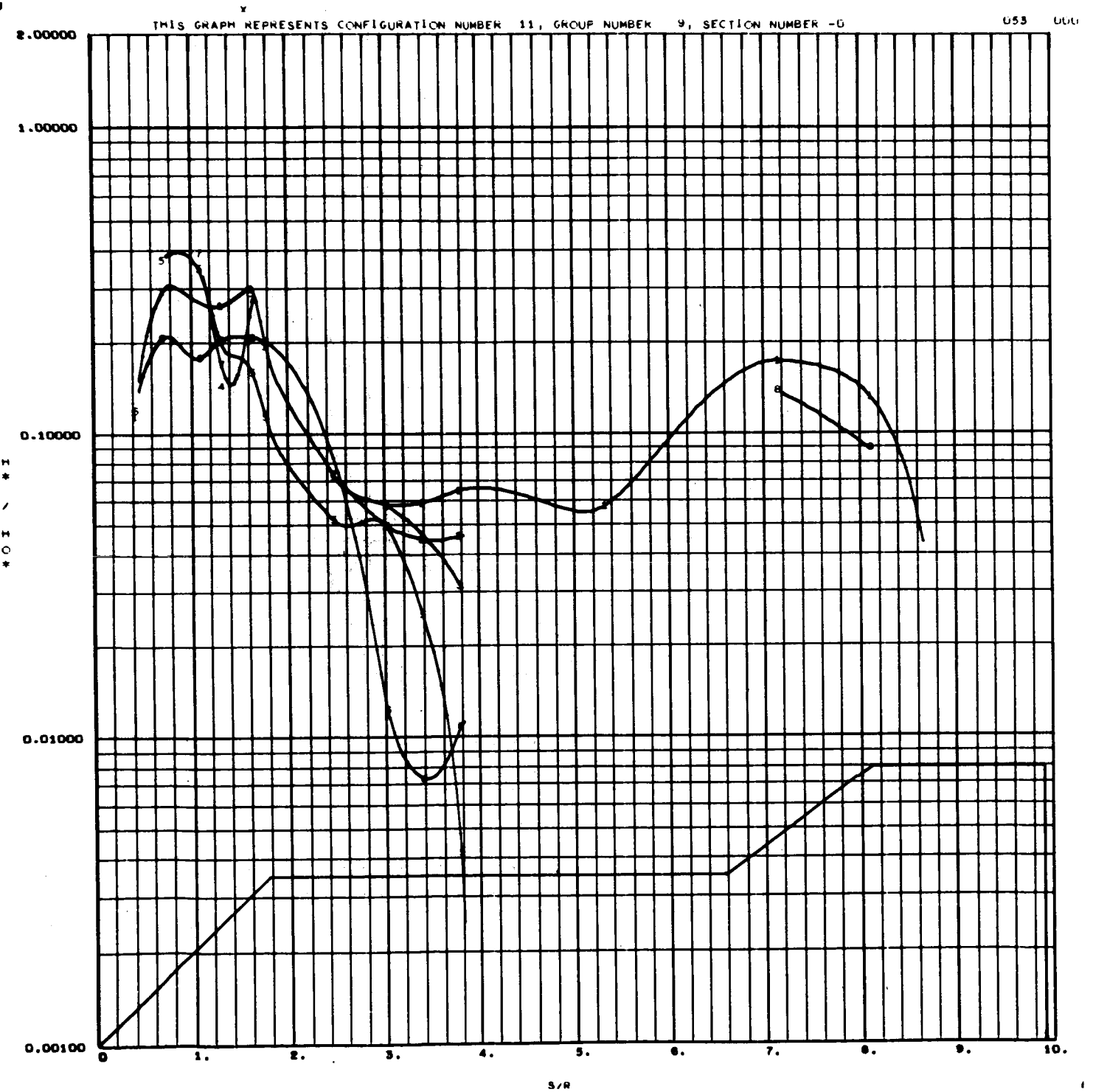
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.04
GROUP NO. 9
TOTAL PRESSURE 212.7 PSIA
REYNOLDS NUMBER PER INCH 0.0281 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1639.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

APOLLO

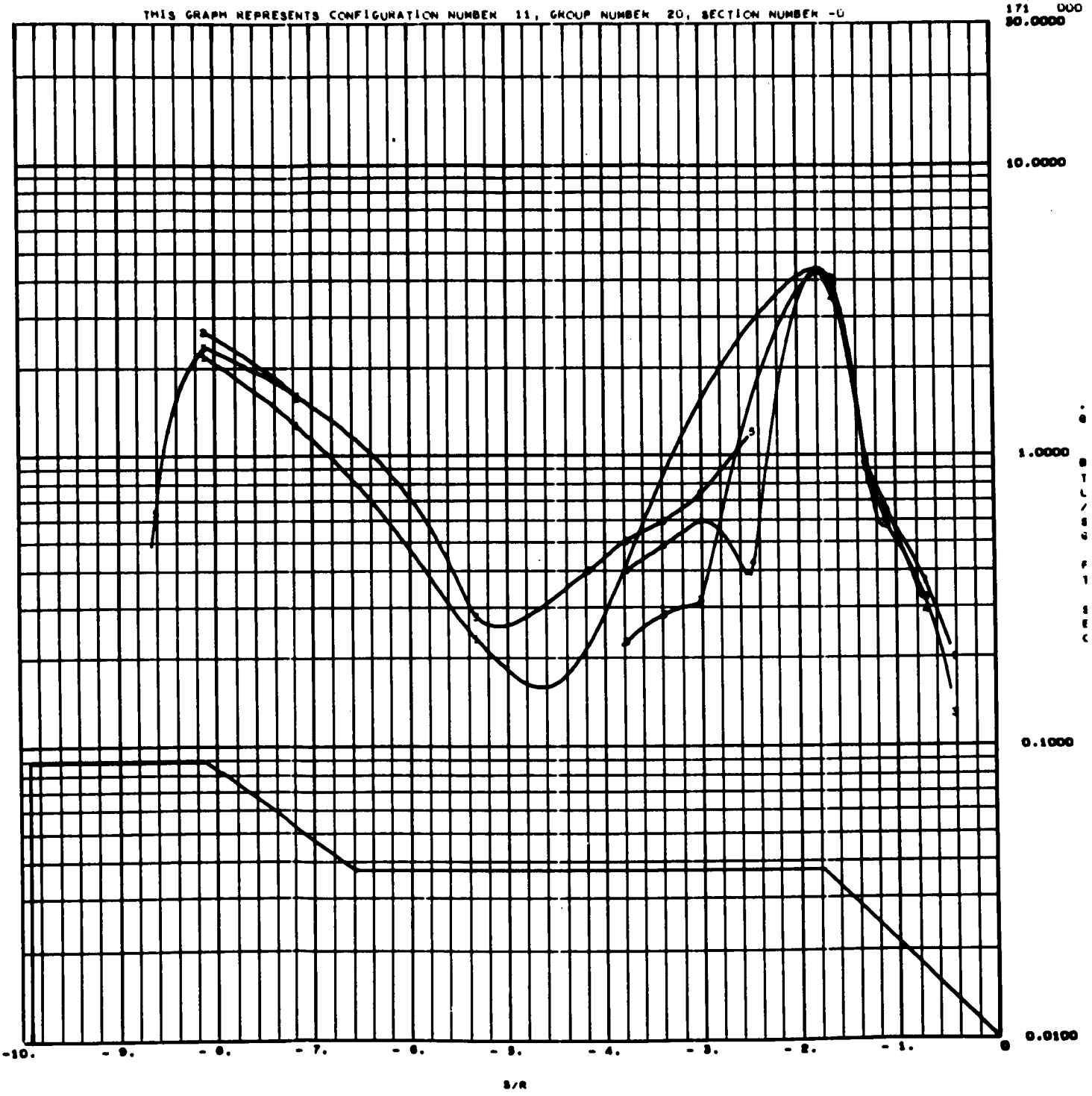
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 20
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0550 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 20, SECTION NUMBER -0

4839-07 6
171 000



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[redacted]

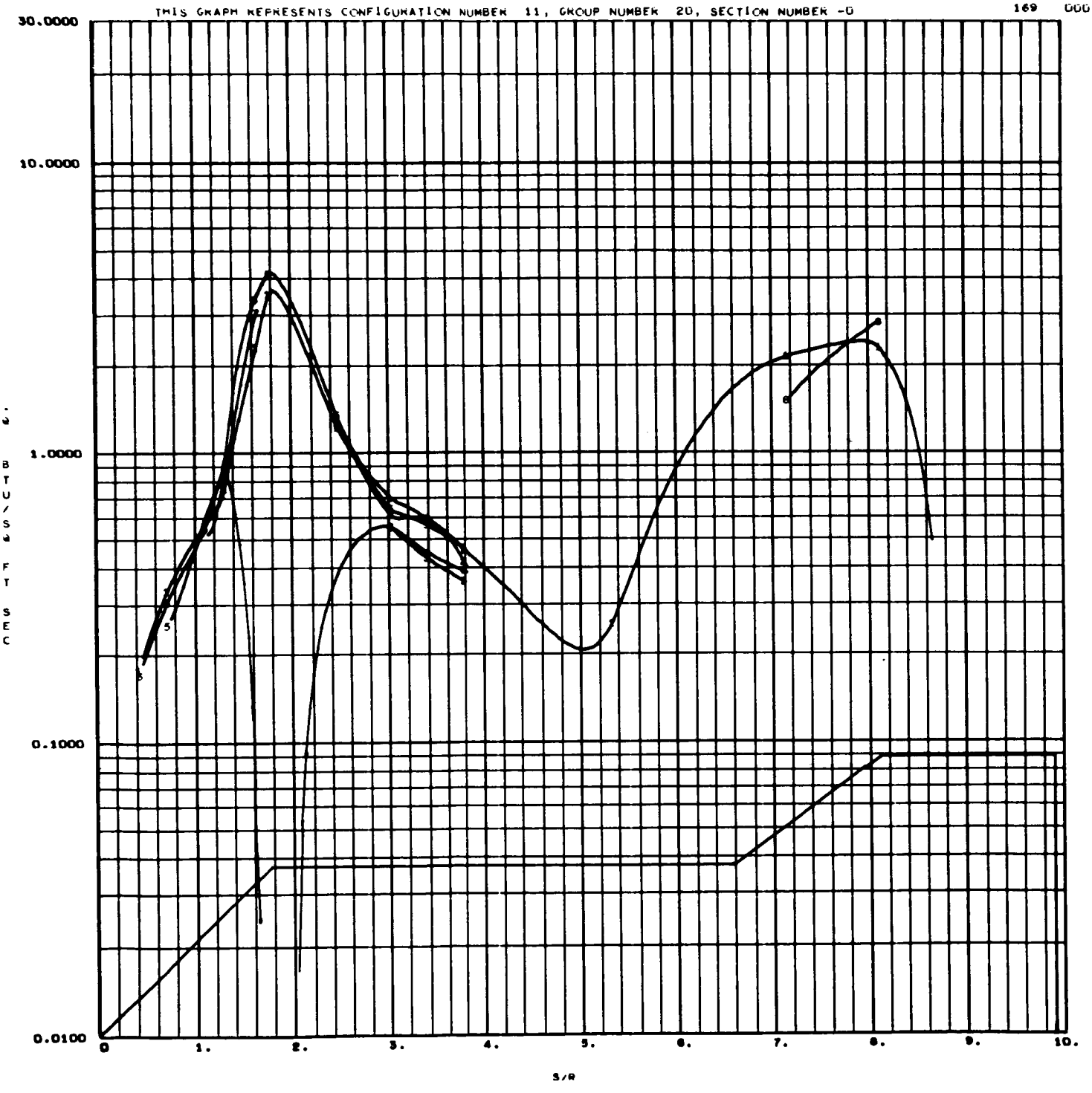
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 20
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0550 X 10^6
H_o* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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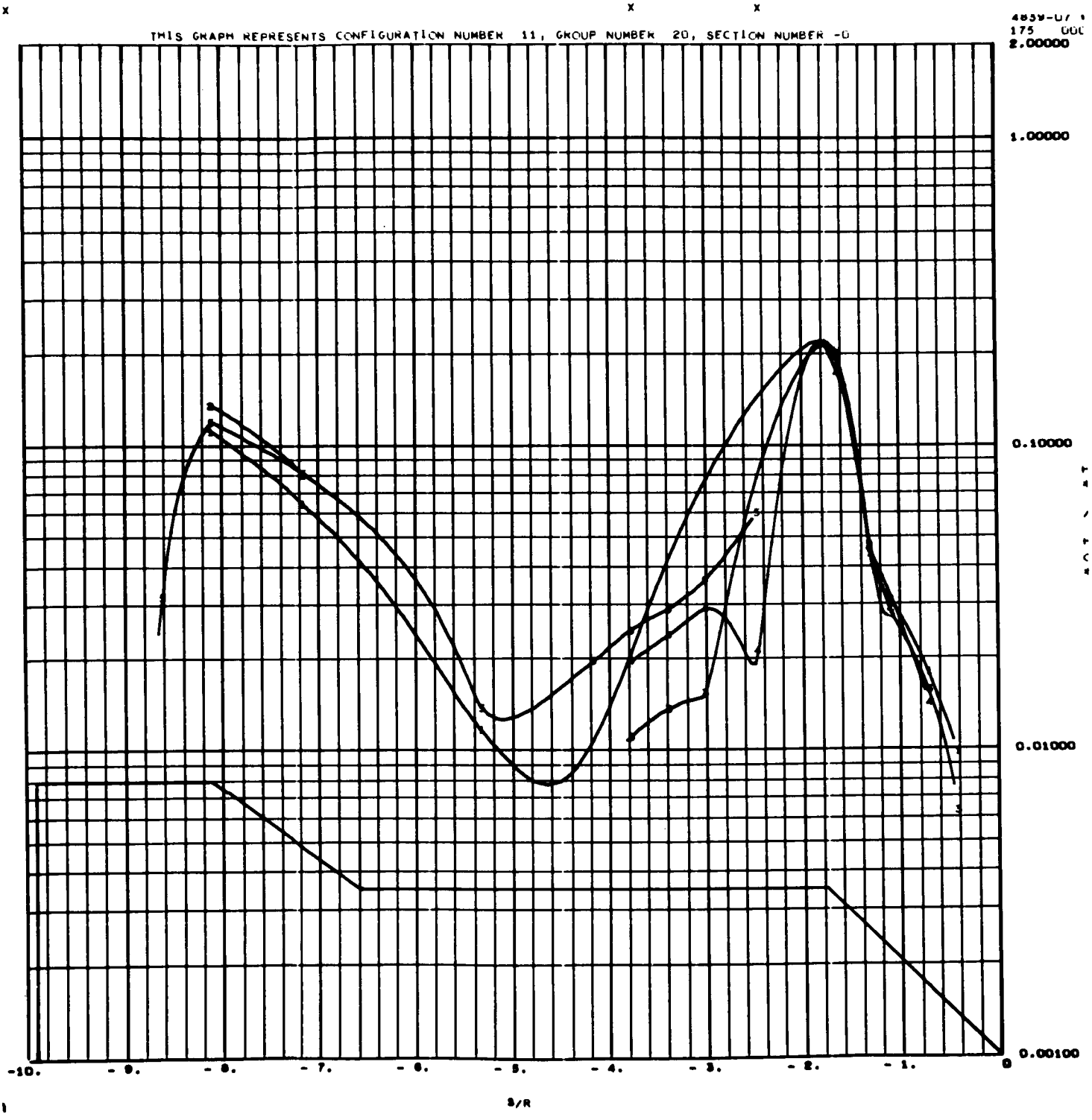
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 20
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0550 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

HEAT TRANSFER TEST

APOLLO

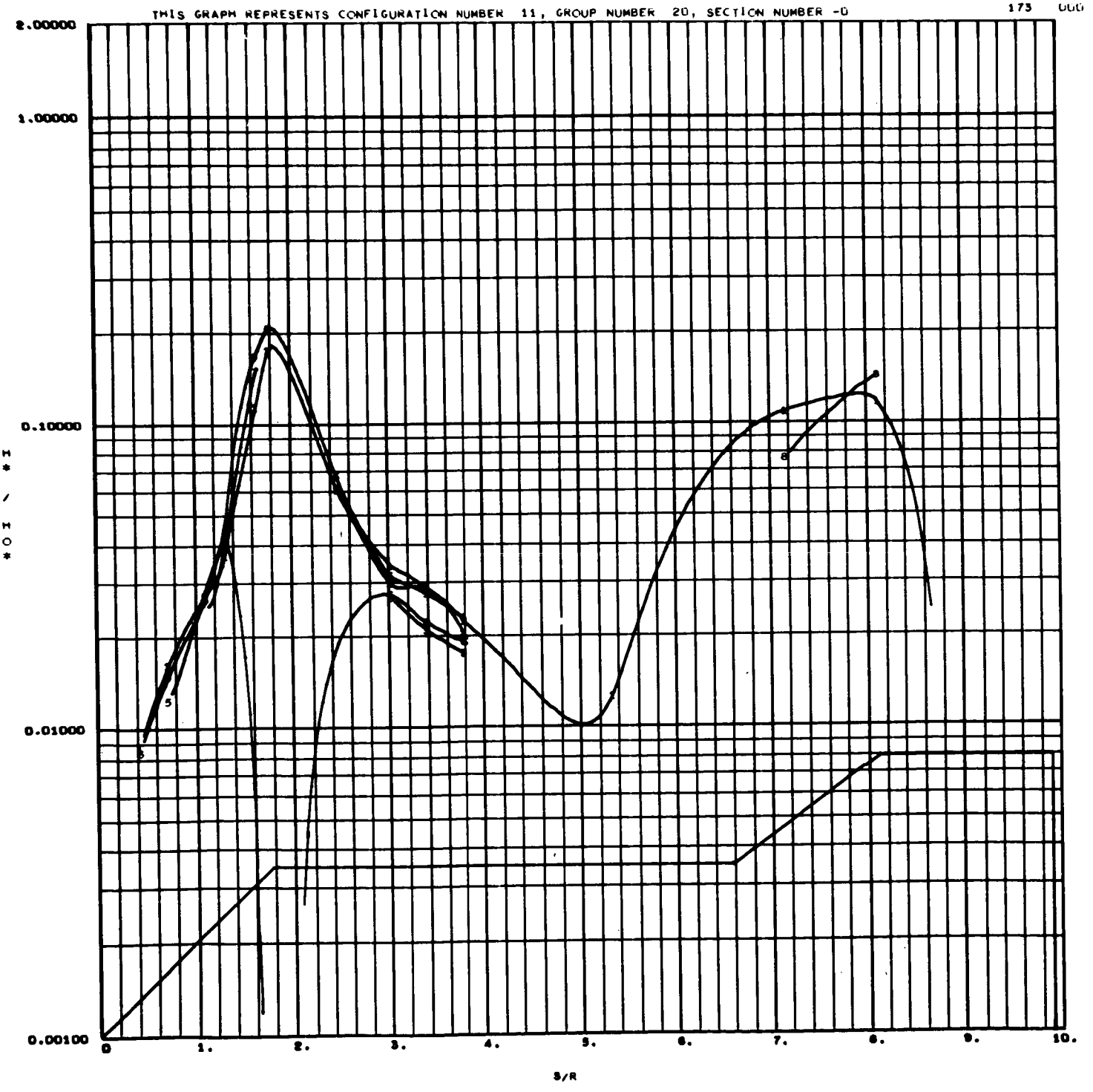
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 20
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0550 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8

4839-07 L
173 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 20, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

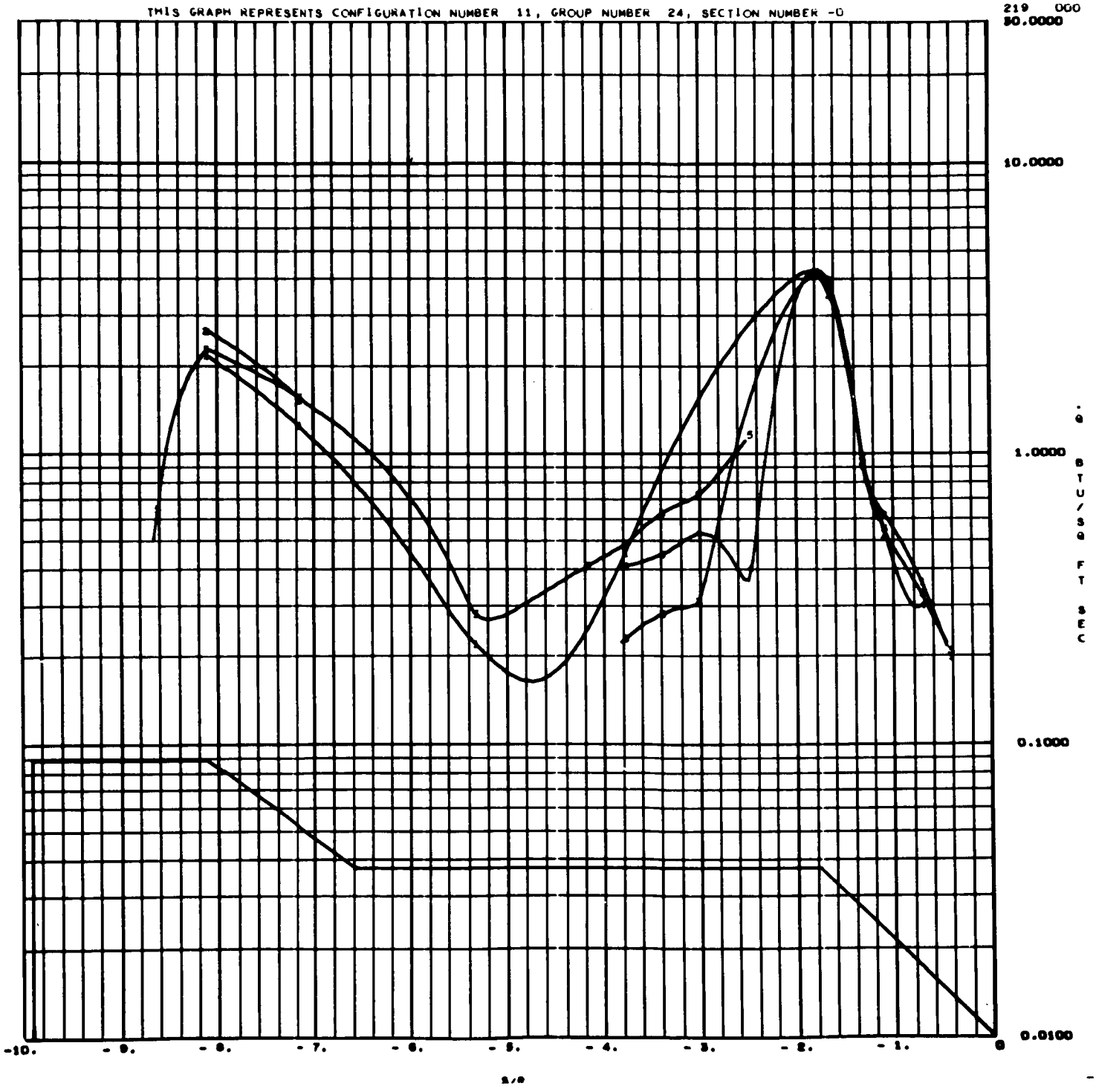
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 24
TOTAL PRESSURE 456.9 PSIA
REYNOLDS NUMBER PER INCH 0.0544 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 24, SECTION NUMBER -0

4839-07
219 000



[redacted]

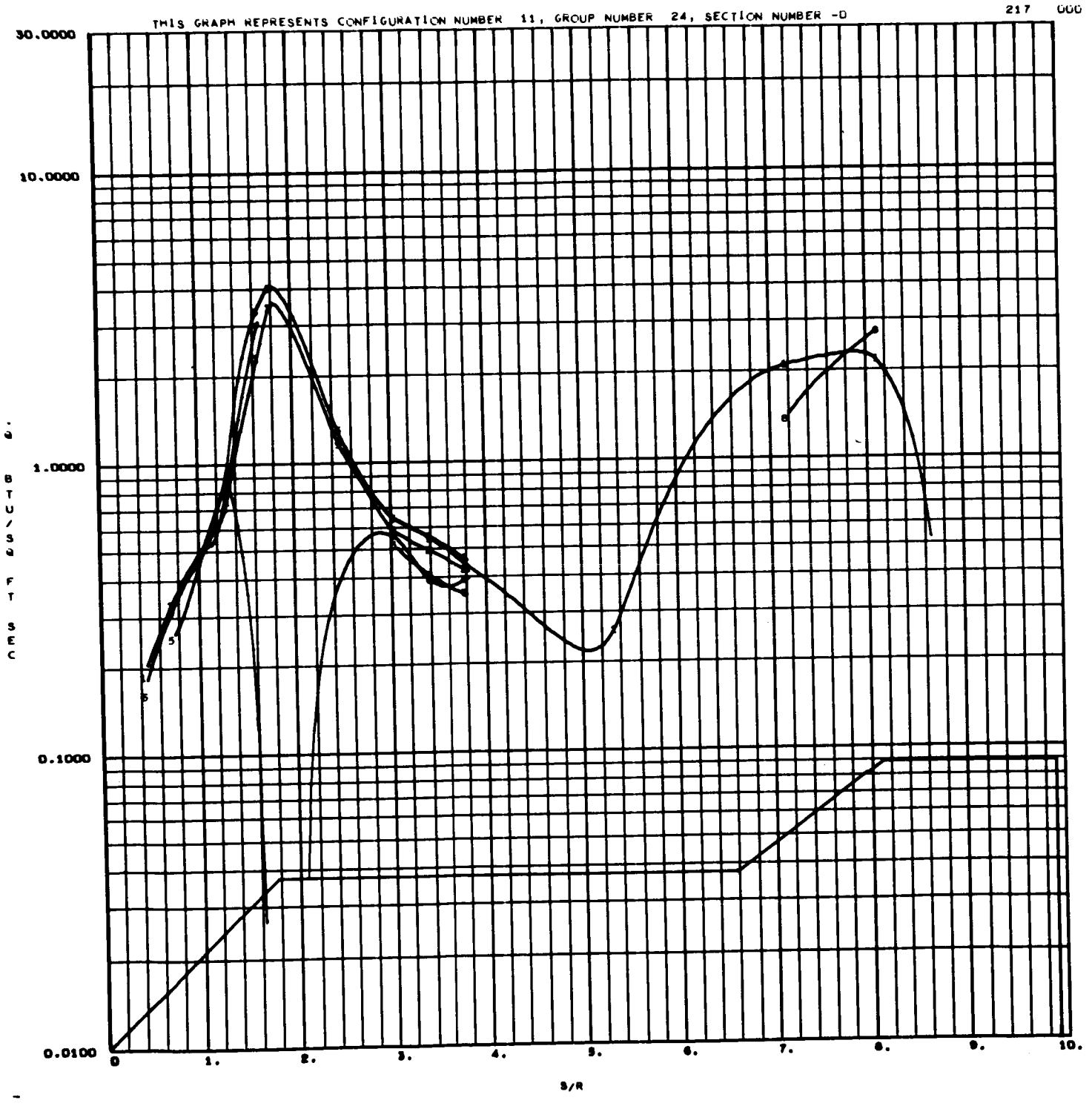
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 24
TOTAL PRESSURE 456.9 PSIA
REYNOLDS NUMBER PER INCH 0.0544 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

~~CONFIDENTIAL~~

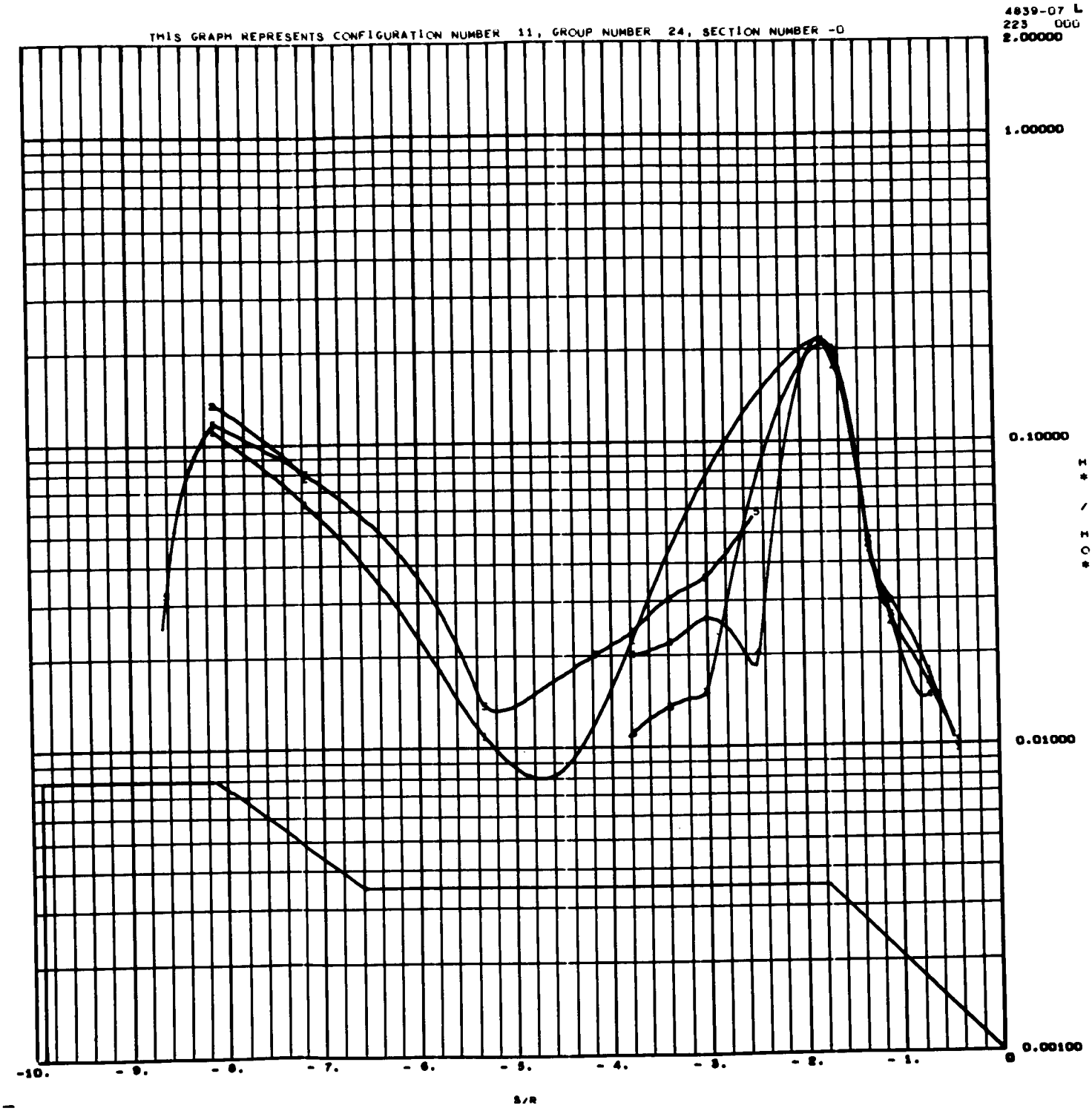
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 24
TOTAL PRESSURE 456.9 PSIA
REYNOLDS NUMBER PER INCH 0.0544 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1728.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



~~CONFIDENTIAL~~

[redacted]

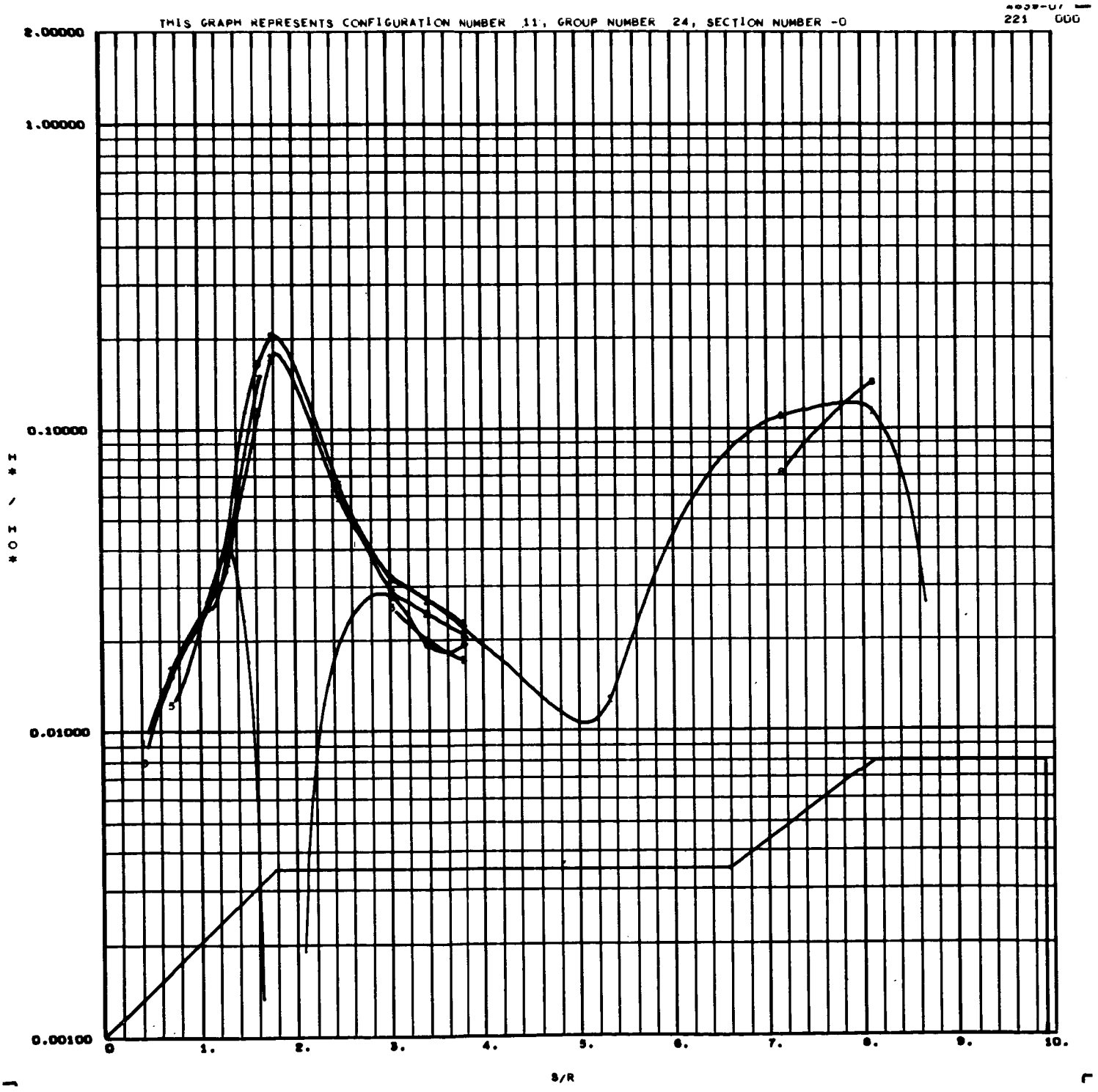
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.00
GROUP NO. 24
TOTAL PRESSURE 456.9 PSIA
REYNOLDS NUMBER PER INCH 0.0544 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1728.60 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

~~CONFIDENTIAL~~

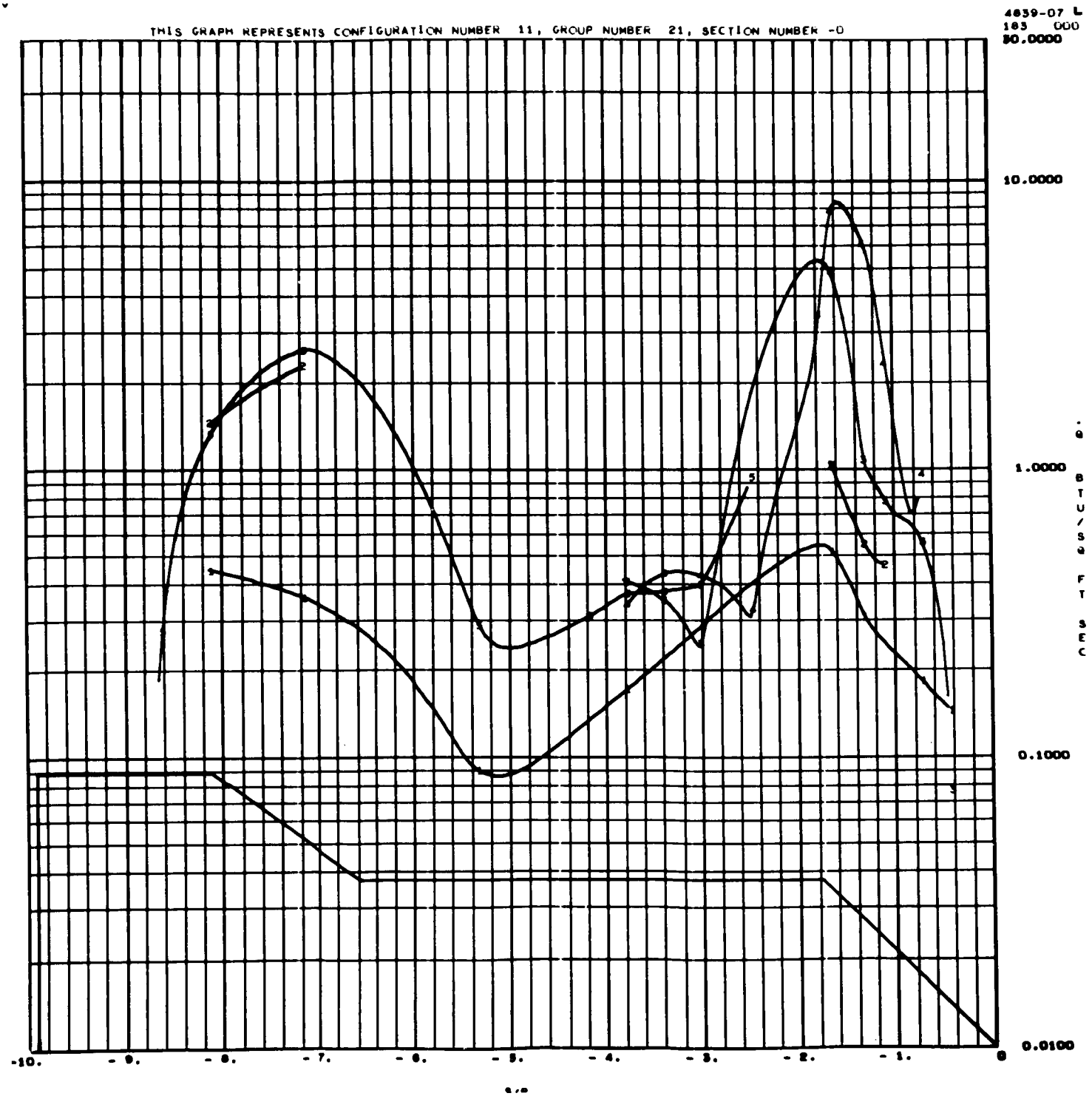
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 21
TOTAL PRESSURE 461.2 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1721.80 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



~~CONFIDENTIAL~~

[redacted]

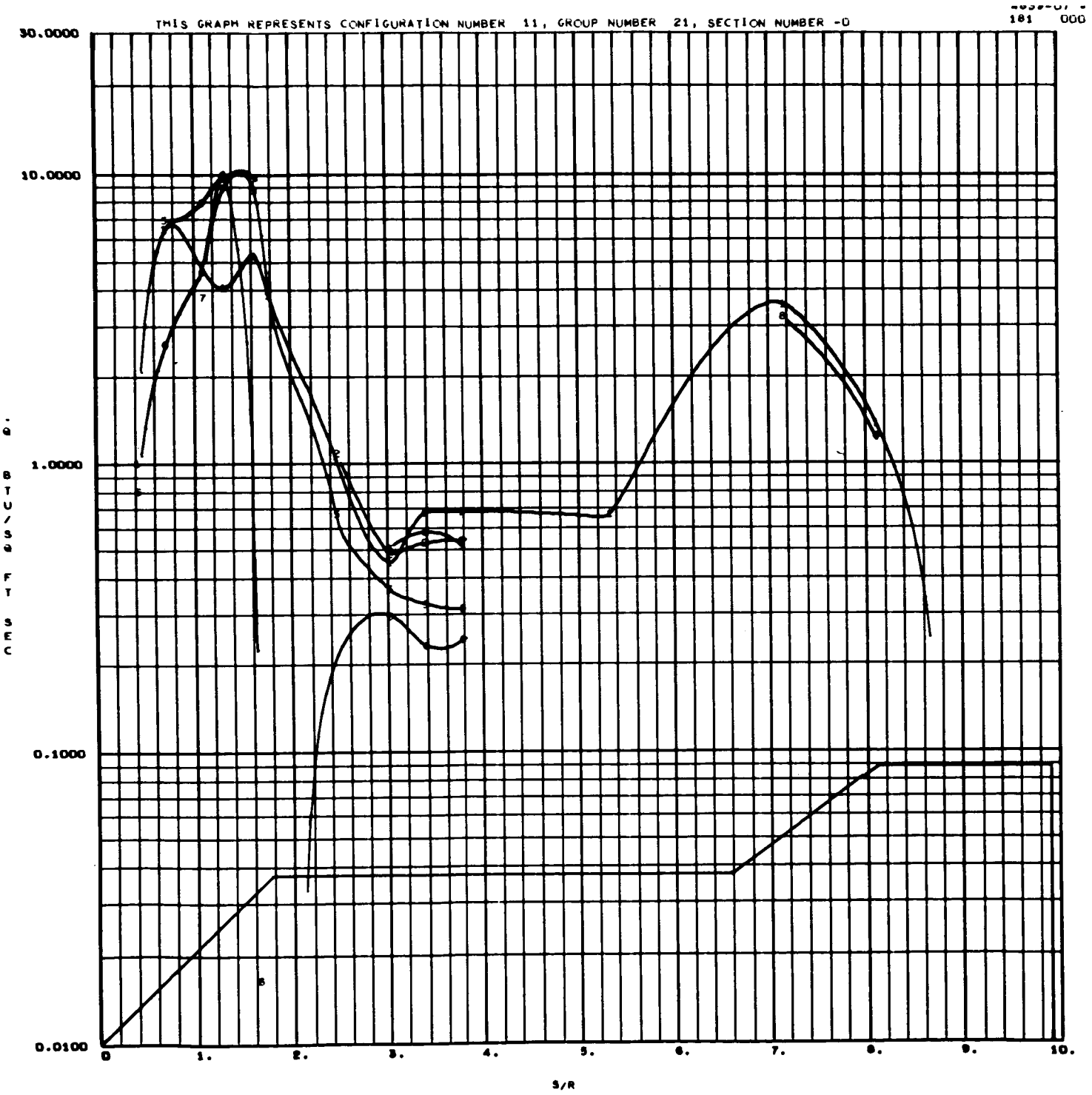
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 21
TOTAL PRESSURE 461.2 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1721.80 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

~~CONFIDENTIAL~~

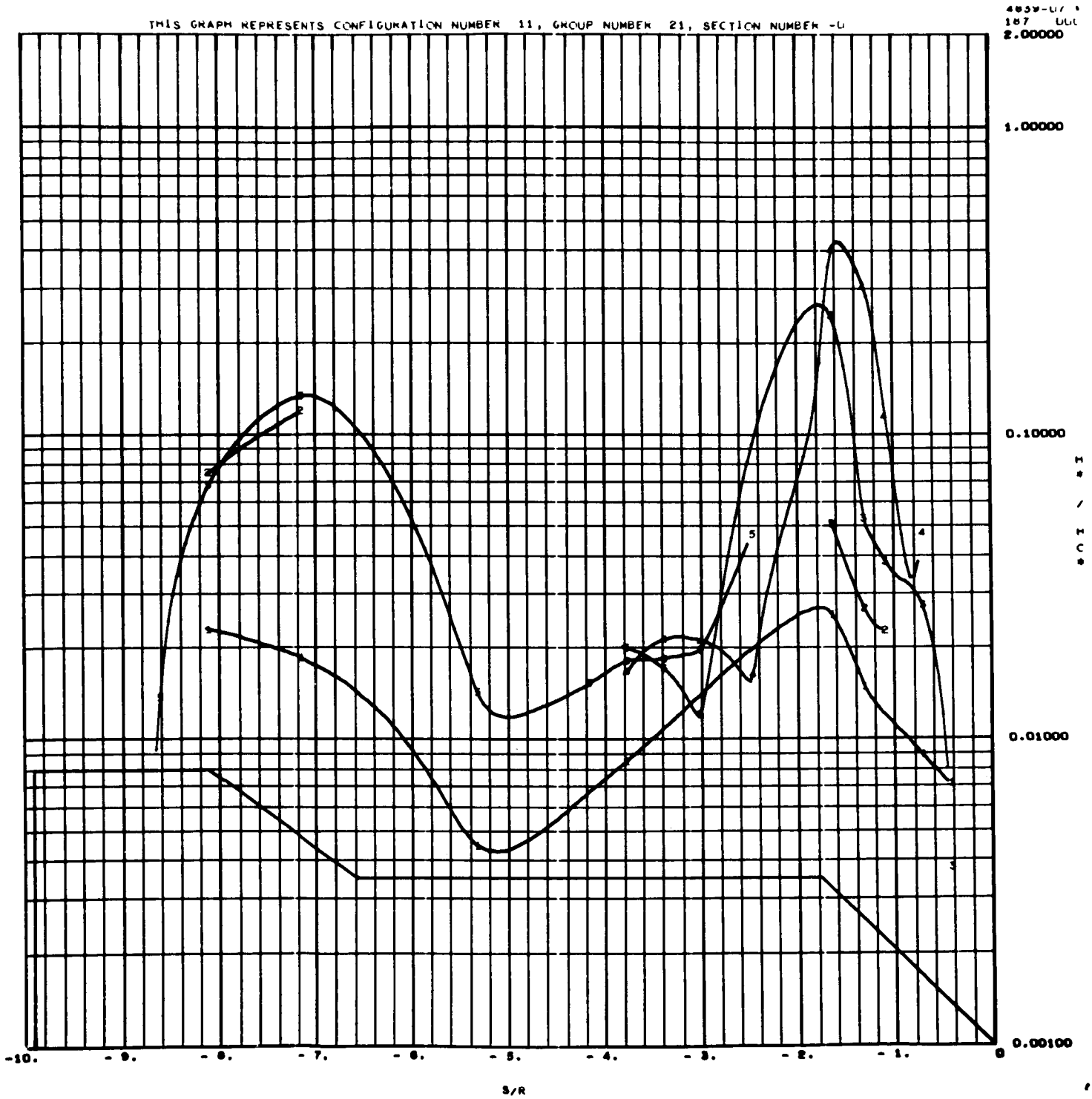
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 21
TOTAL PRESSURE 461.2 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1721.80 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

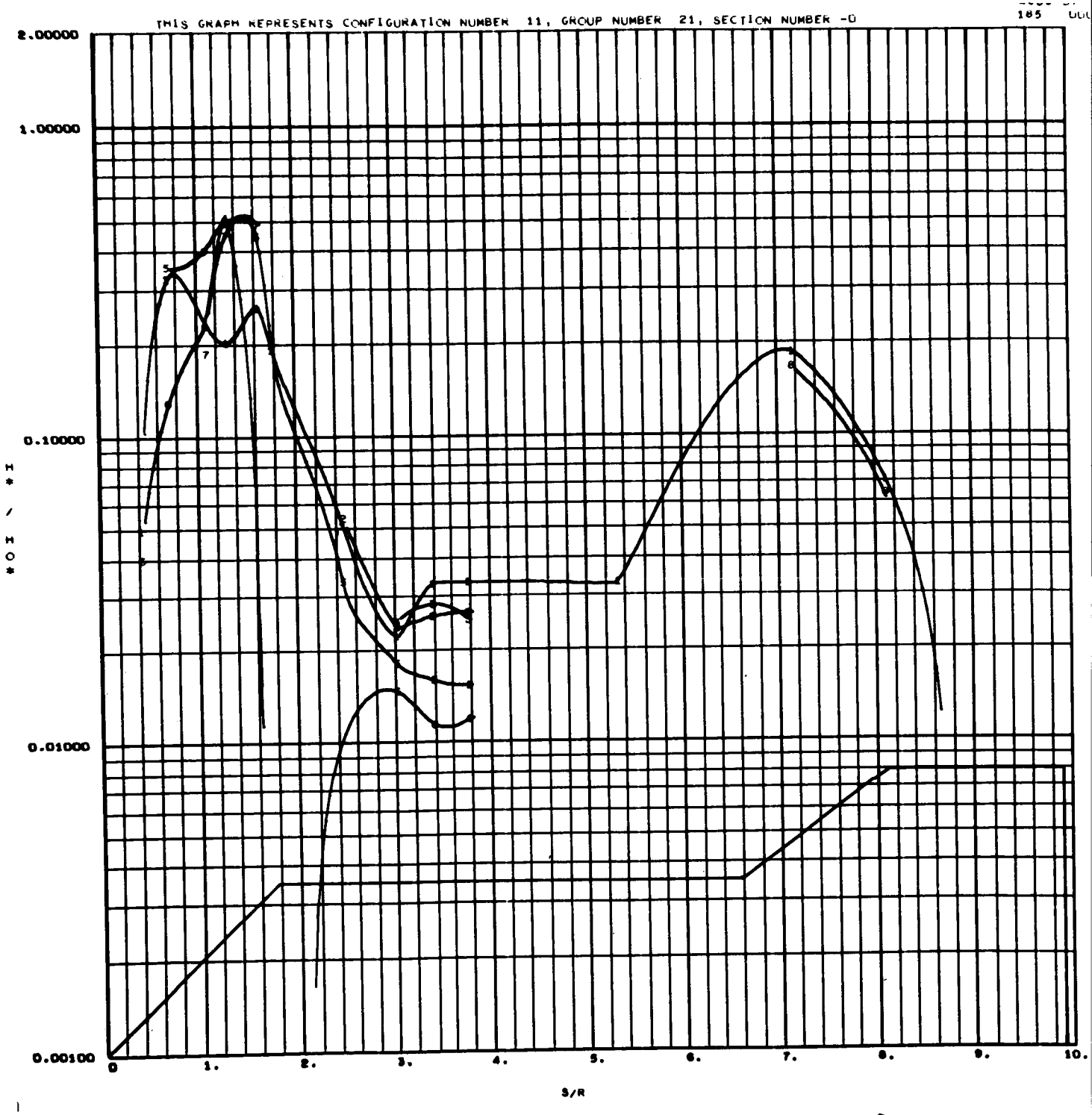
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 21
TOTAL PRESSURE 461.2 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1721.80 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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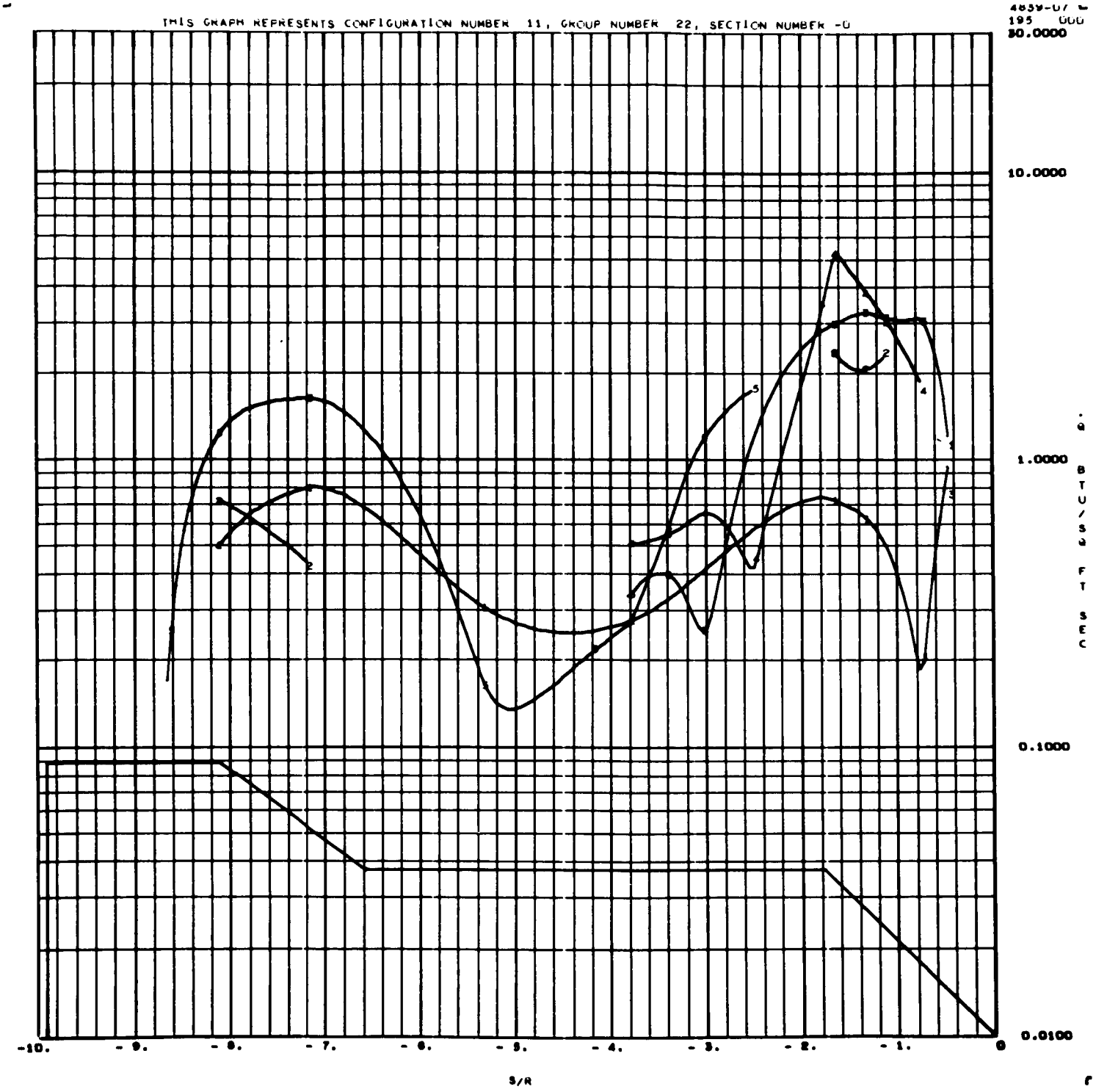
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 22
TOTAL PRESSURE 461.4 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1725.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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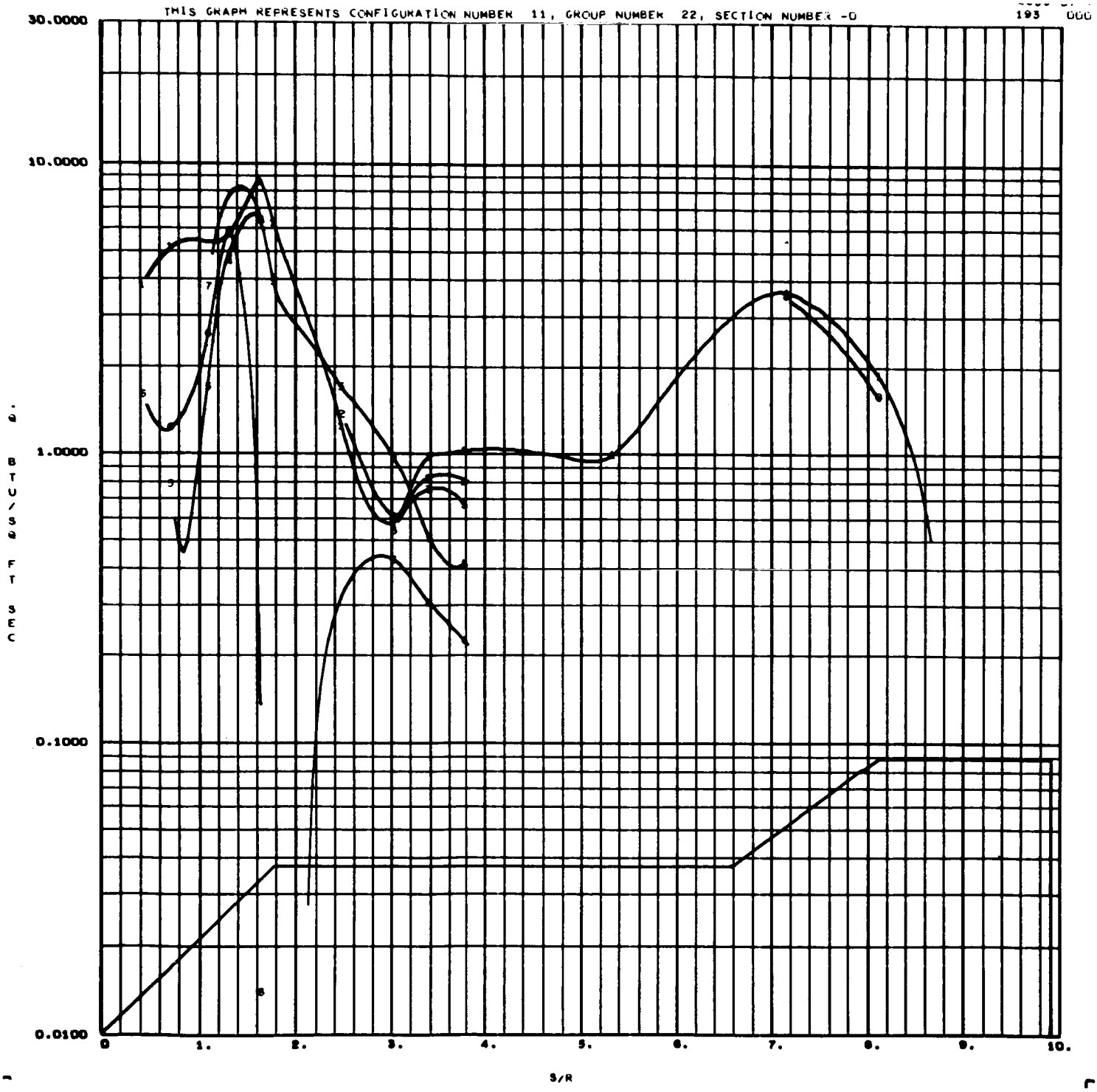
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 22
TOTAL PRESSURE 461.4 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1725.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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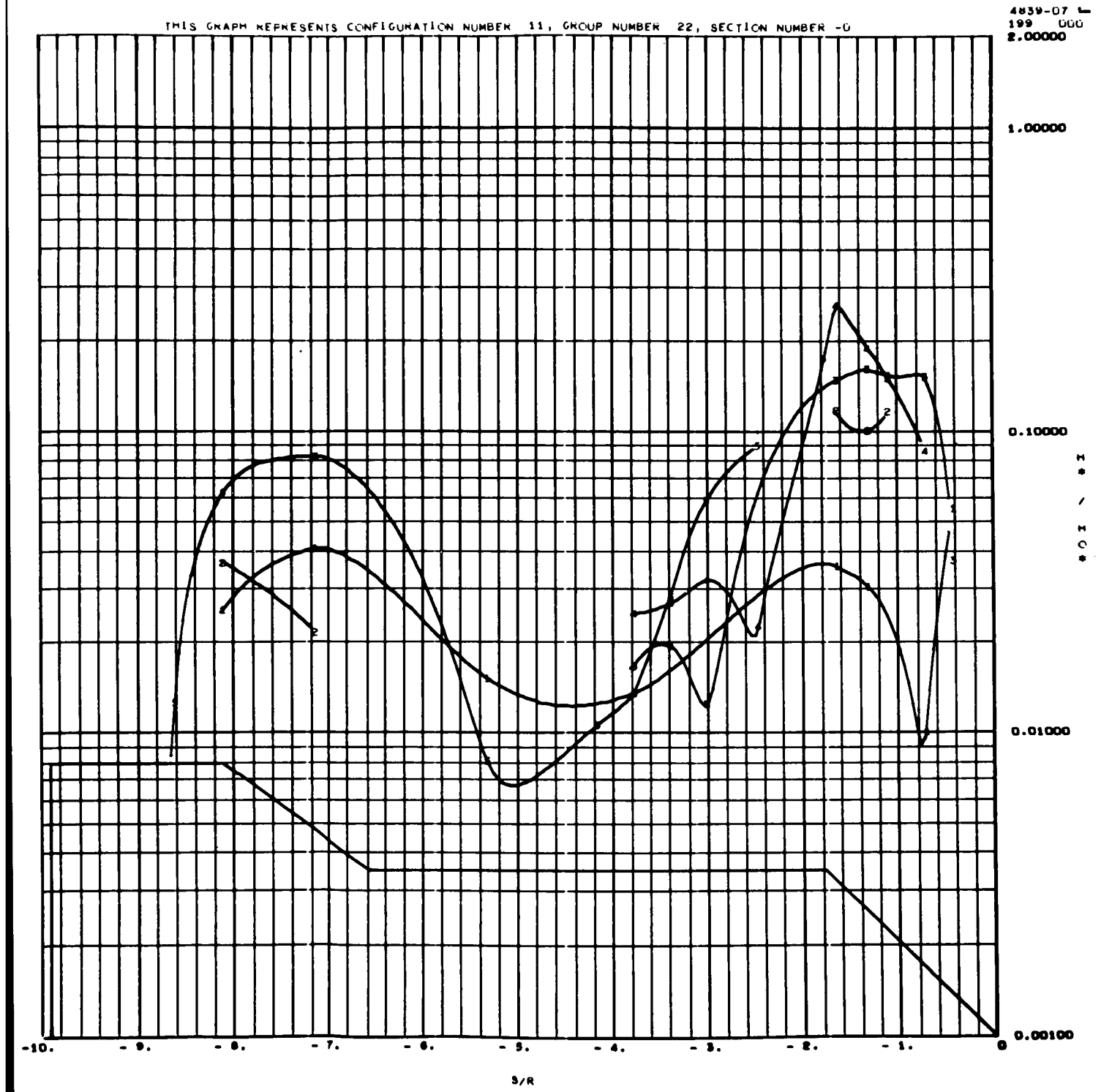
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 22
TOTAL PRESSURE 461.4 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1725.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

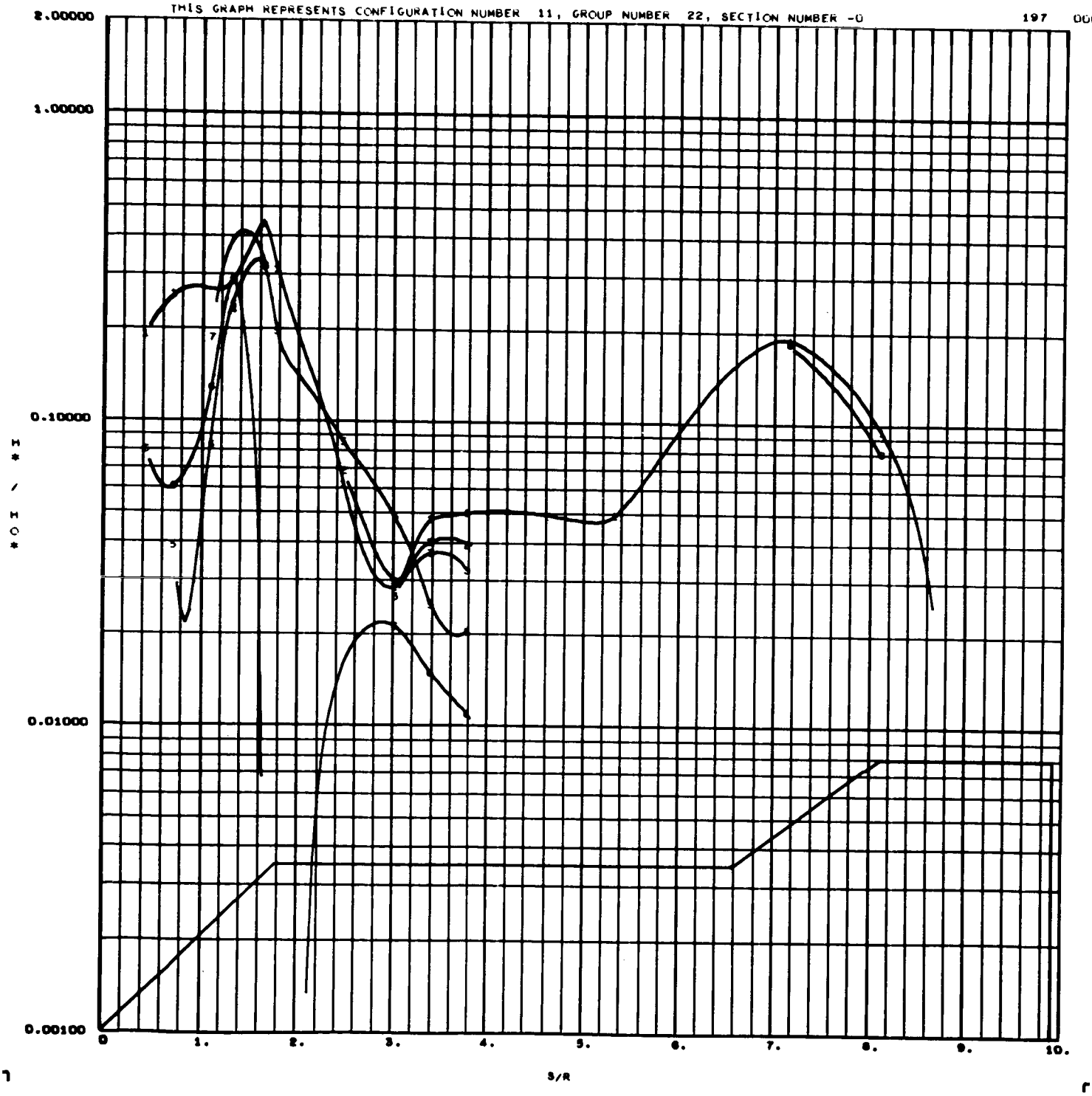
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 22
TOTAL PRESSURE 461.4 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_O^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1725.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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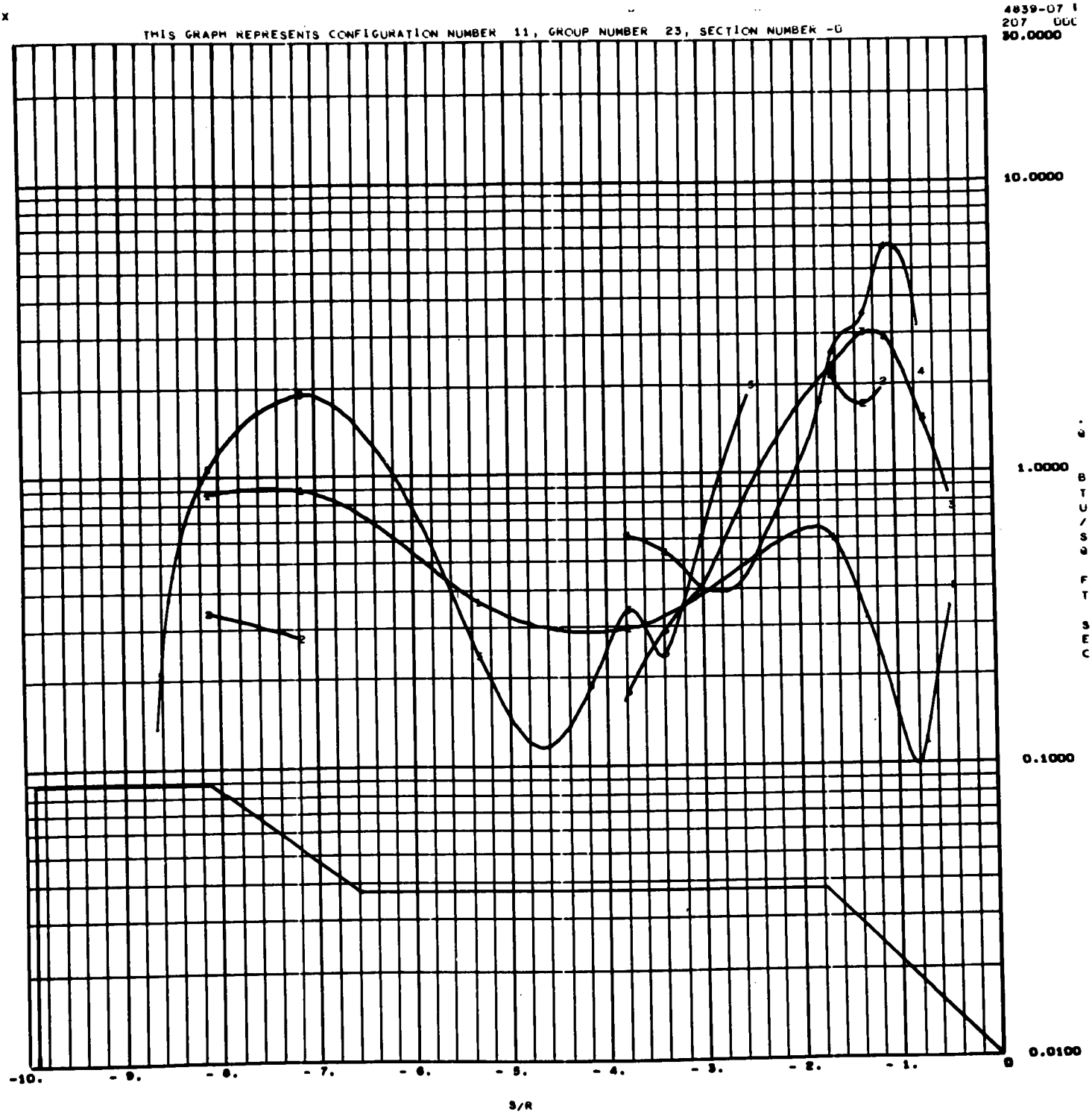
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 23
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

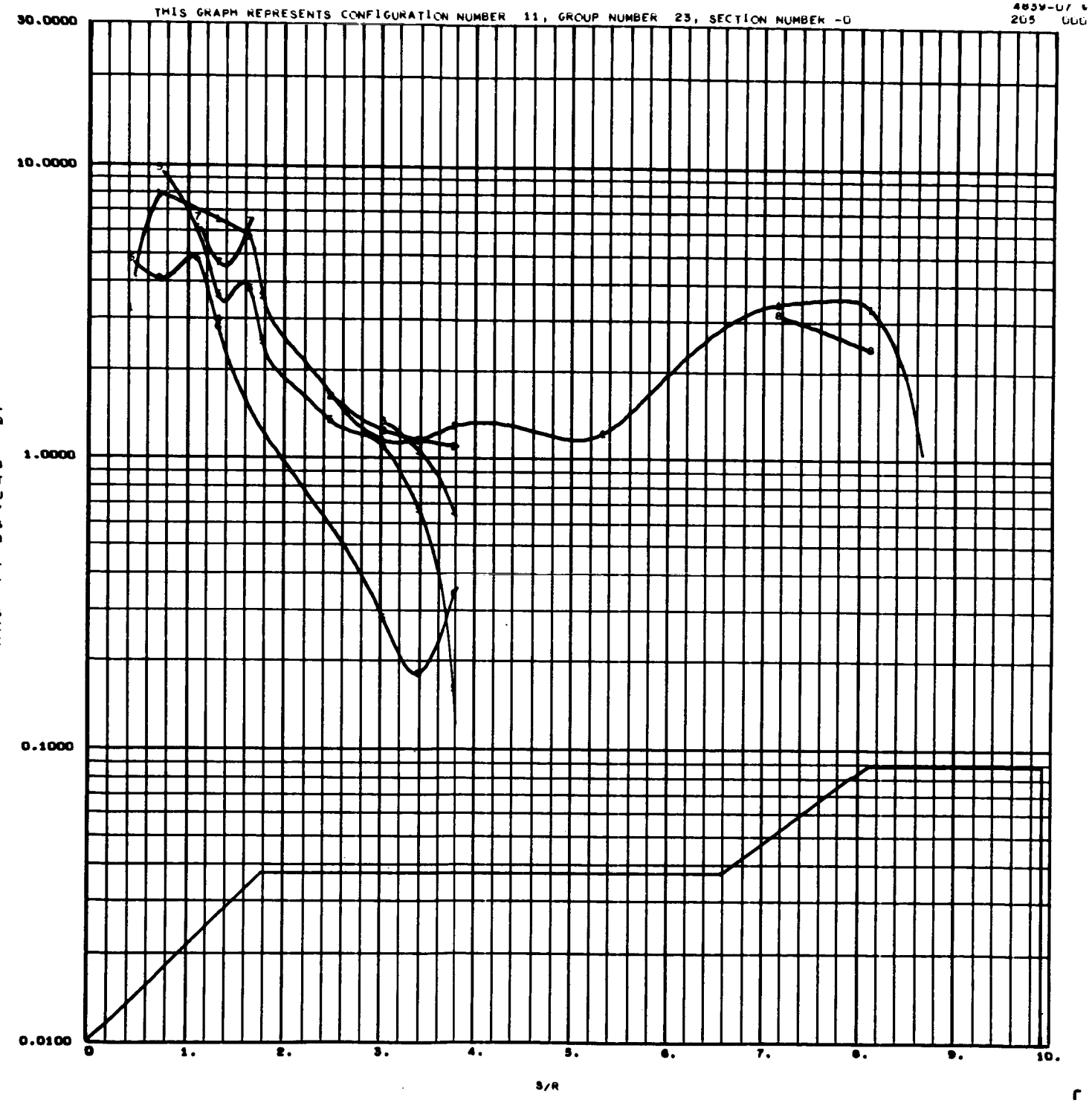
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 23
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1726.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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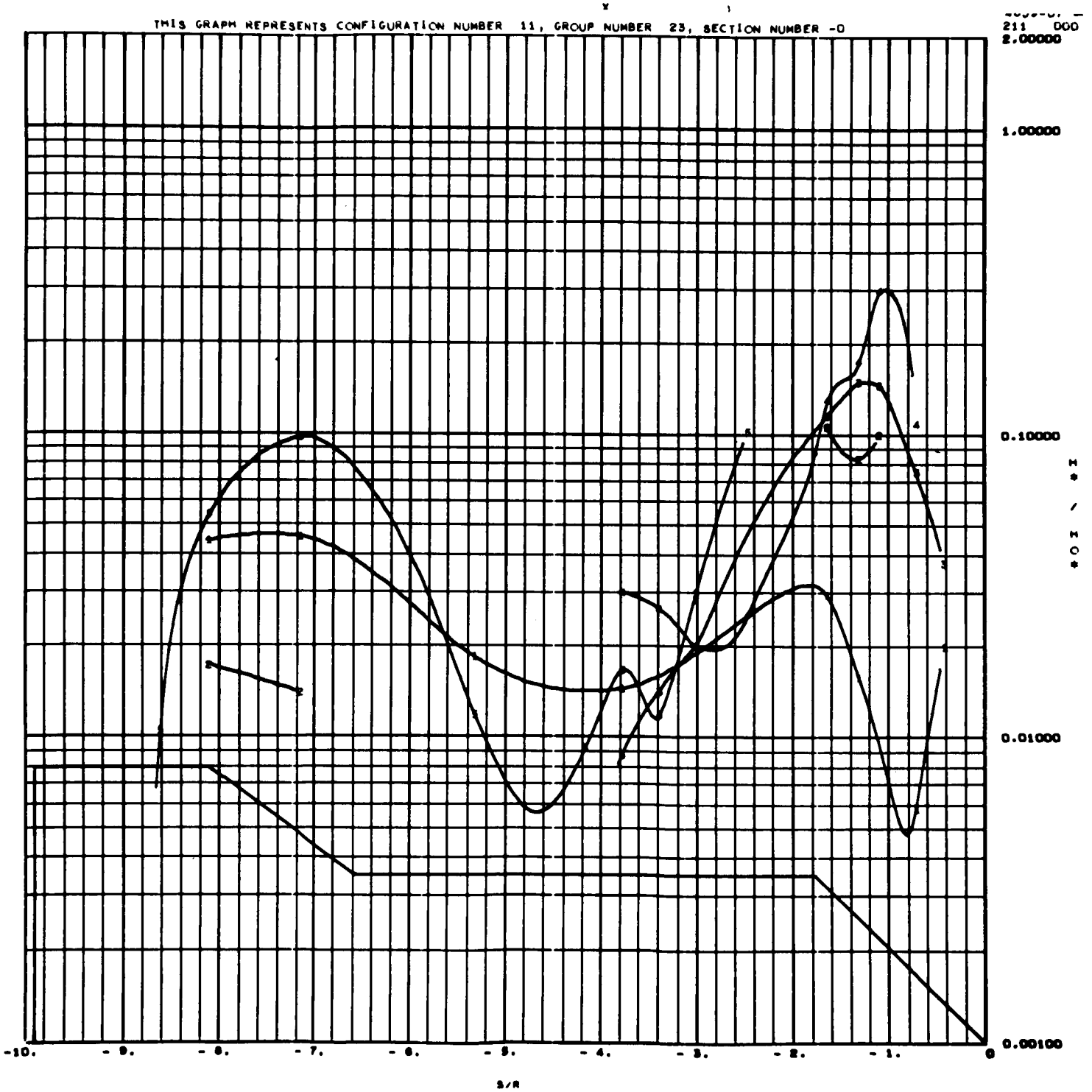
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 23
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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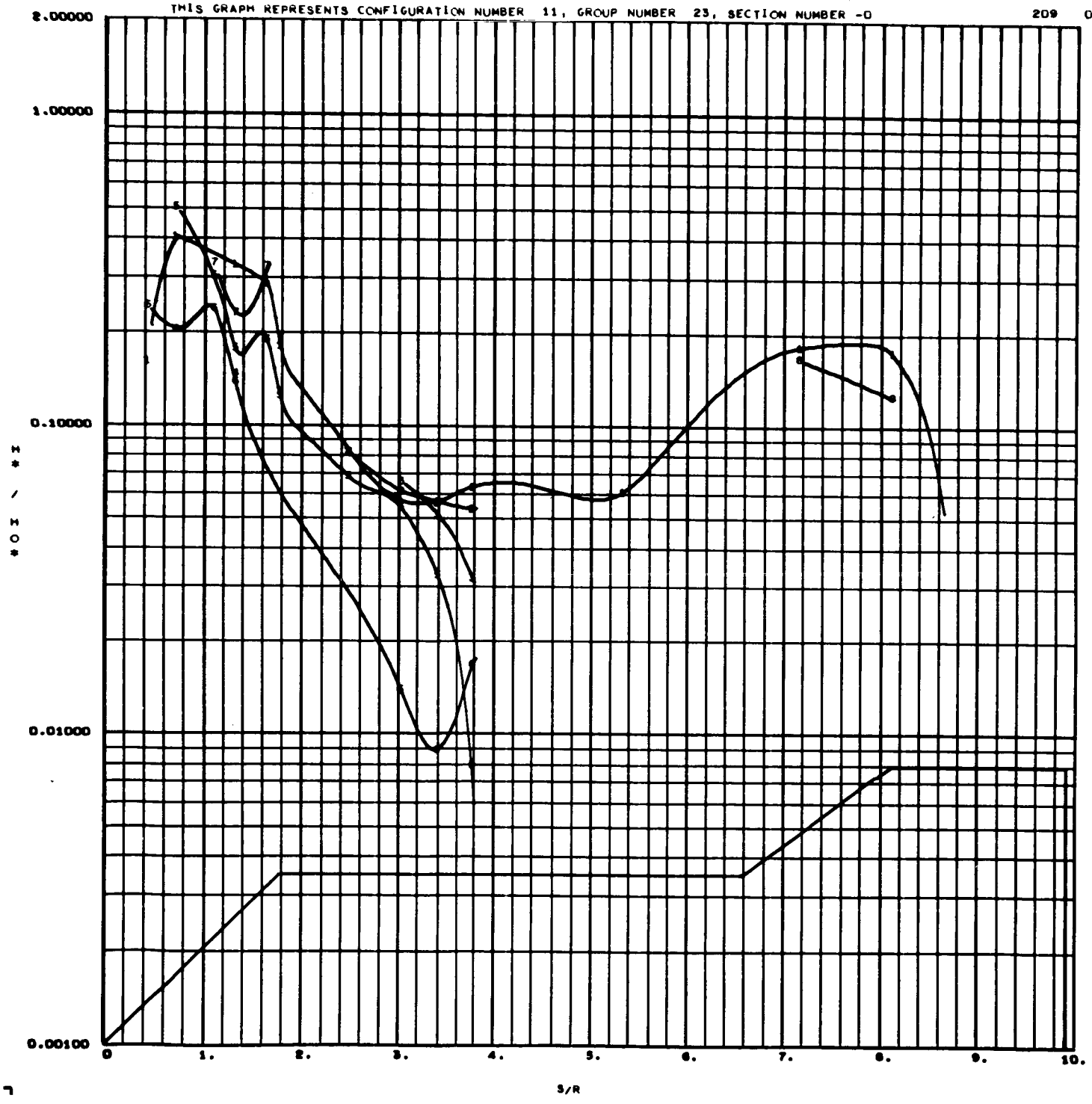
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.09
GROUP NO. 23
TOTAL PRESSURE 459.2 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.80 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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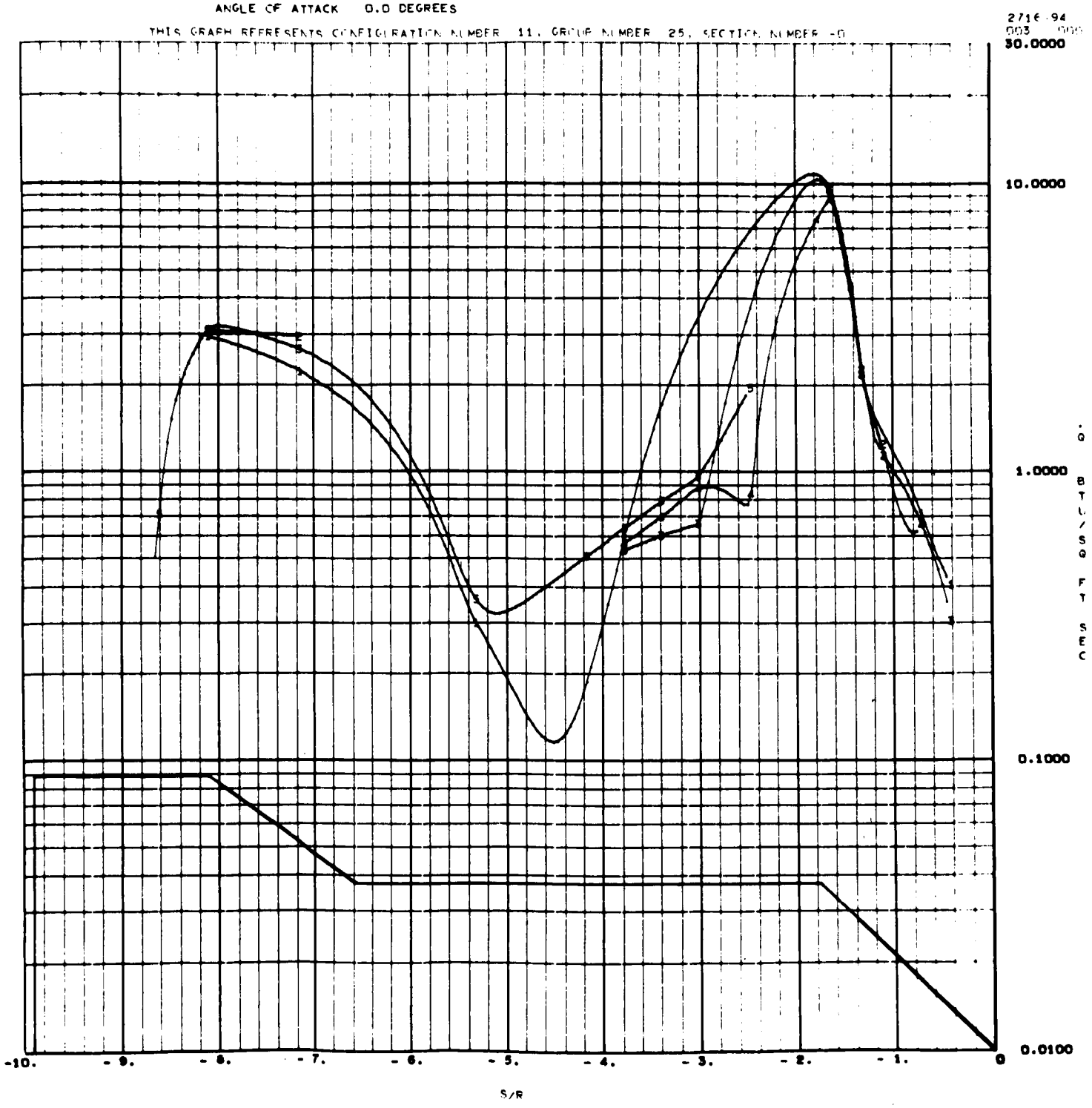
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 25
TOTAL PRESSURE 764.3 PSIA
REYNOLDS NUMBER PER INCH 0.0858 x 10^6
H_c^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1782.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

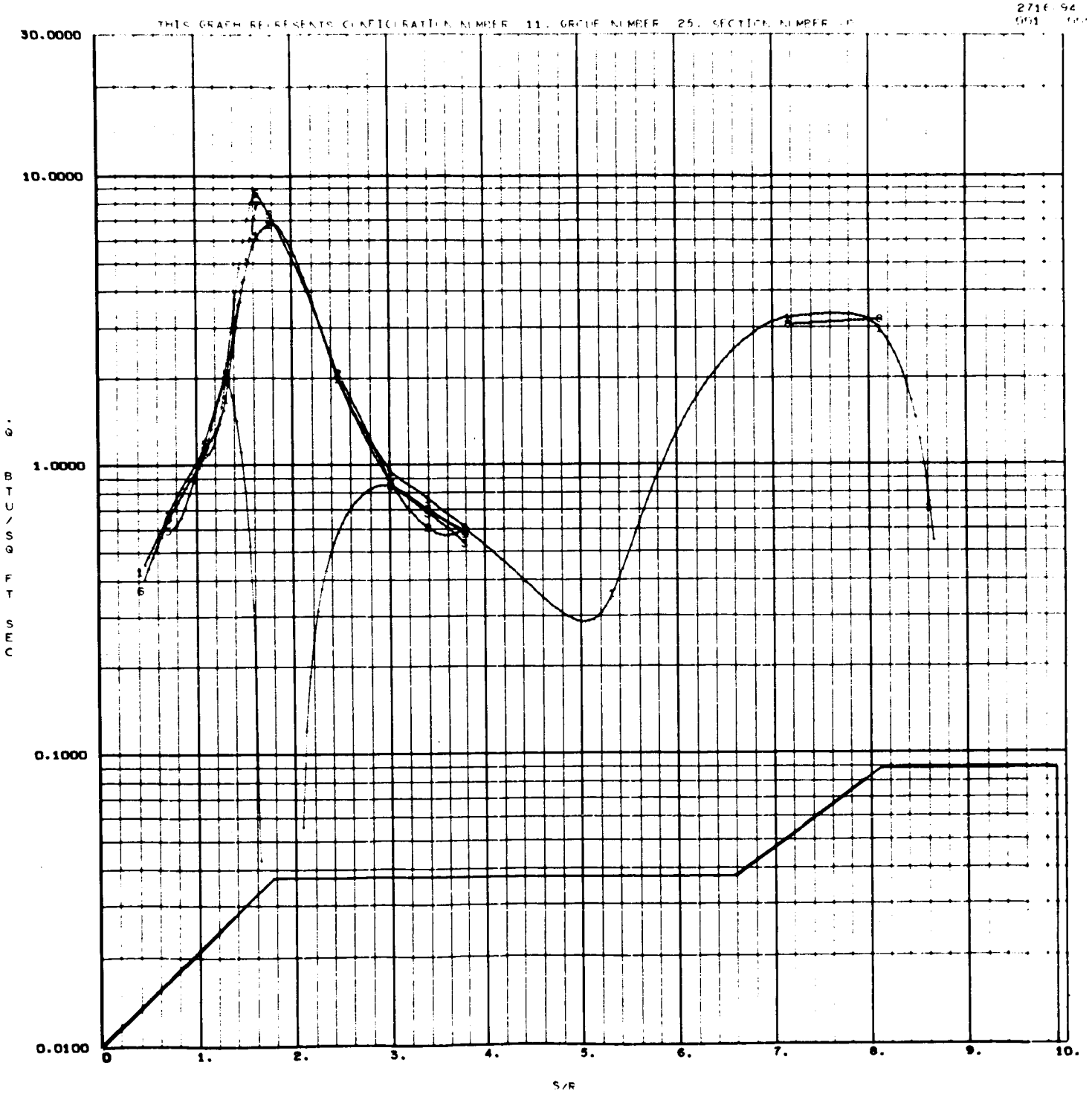
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 25
TOTAL PRESSURE 764.3 PSIA
REYNOLDS NUMBER PER INCH 0.0858 X 10^6
H_c^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1782.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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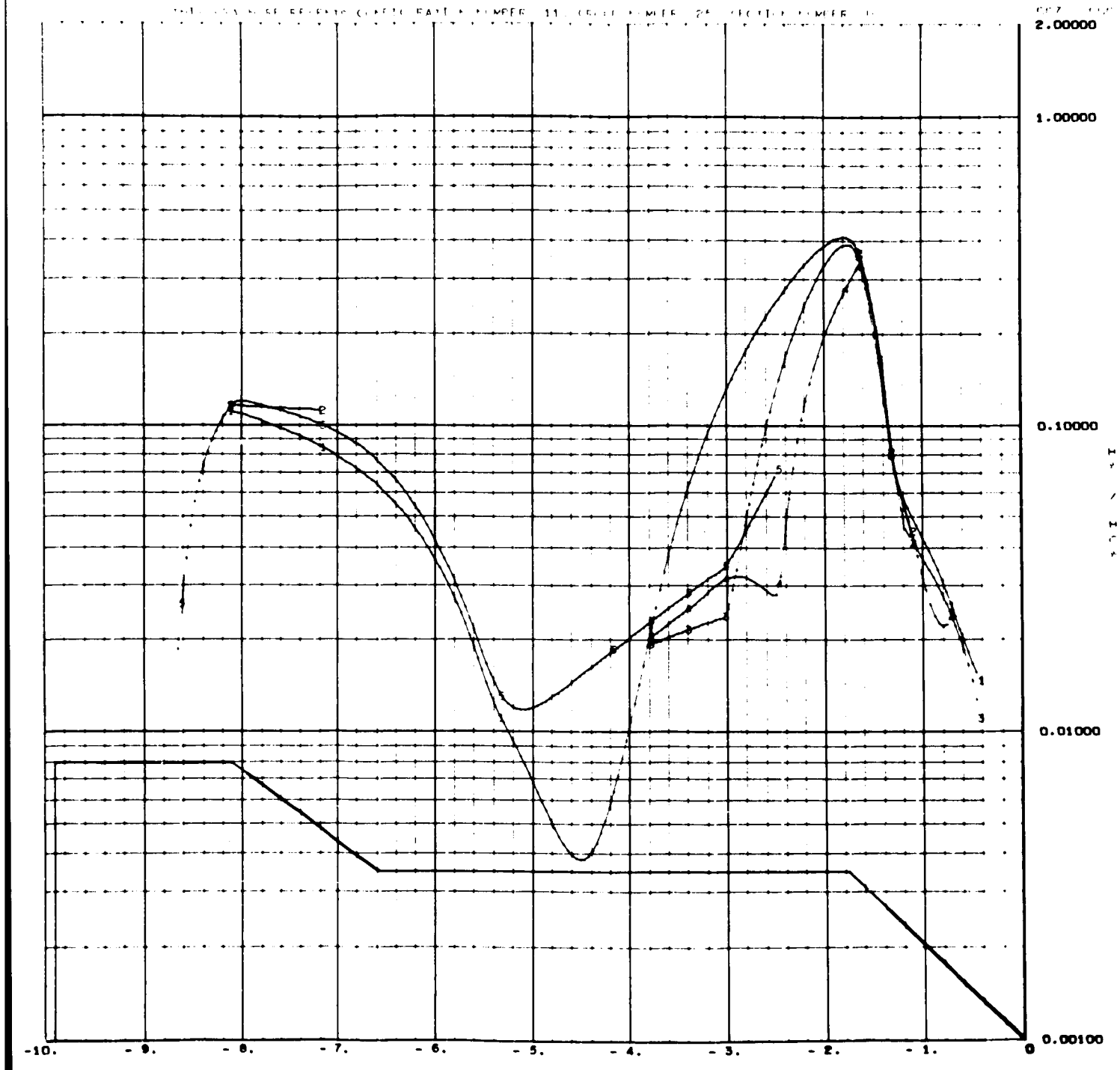
CONFIGURATION 11 MACH NO. 10.13
CURVE NO. 25
TOTAL PRESSURE 764.3 PSIA
REYNOLDS NUMBER PER INCH 0.0868 X 10^6
H_∞ 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1782.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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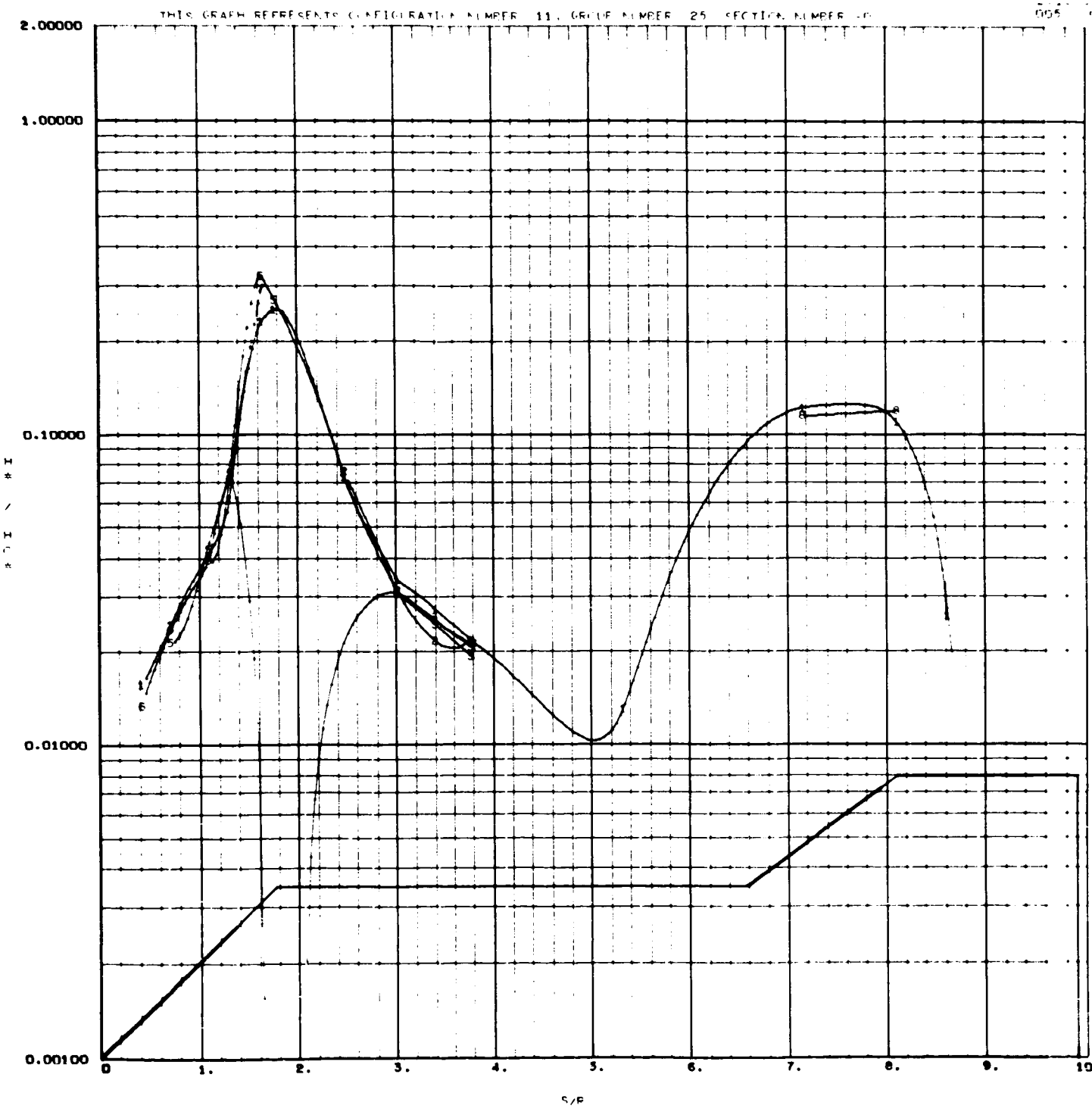
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 25
TOTAL PRESSURE 764.3 PSIA
REYNOLDS NUMBER PER INCH 0.0858 X 10^6
H_c^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1782.00 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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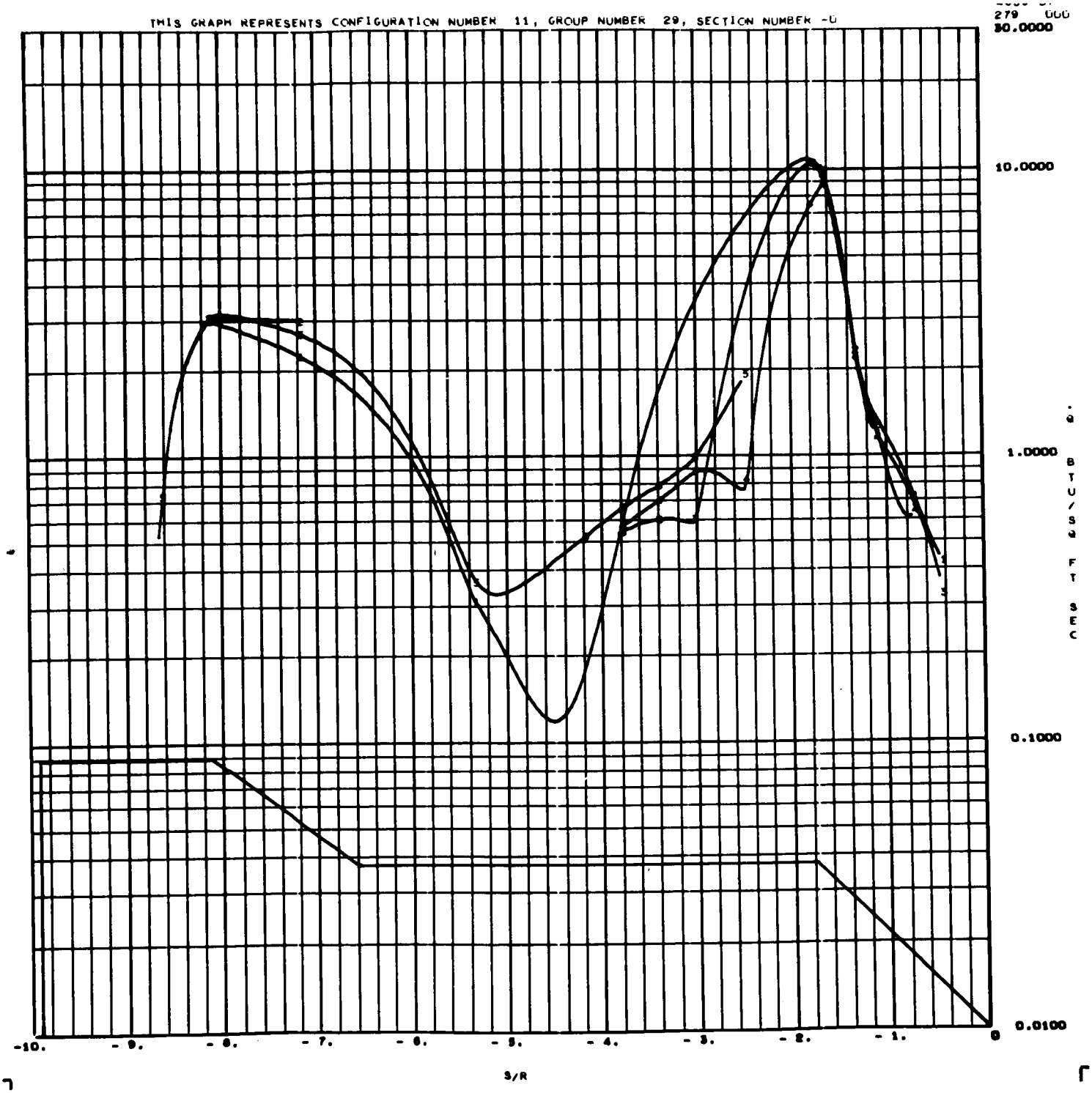
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.15
GROUP NO. 29
TOTAL PRESSURE 753.4 PSIA
REYNOLDS NUMBER PER INCH 0.0835 X 10^6
M_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1794.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

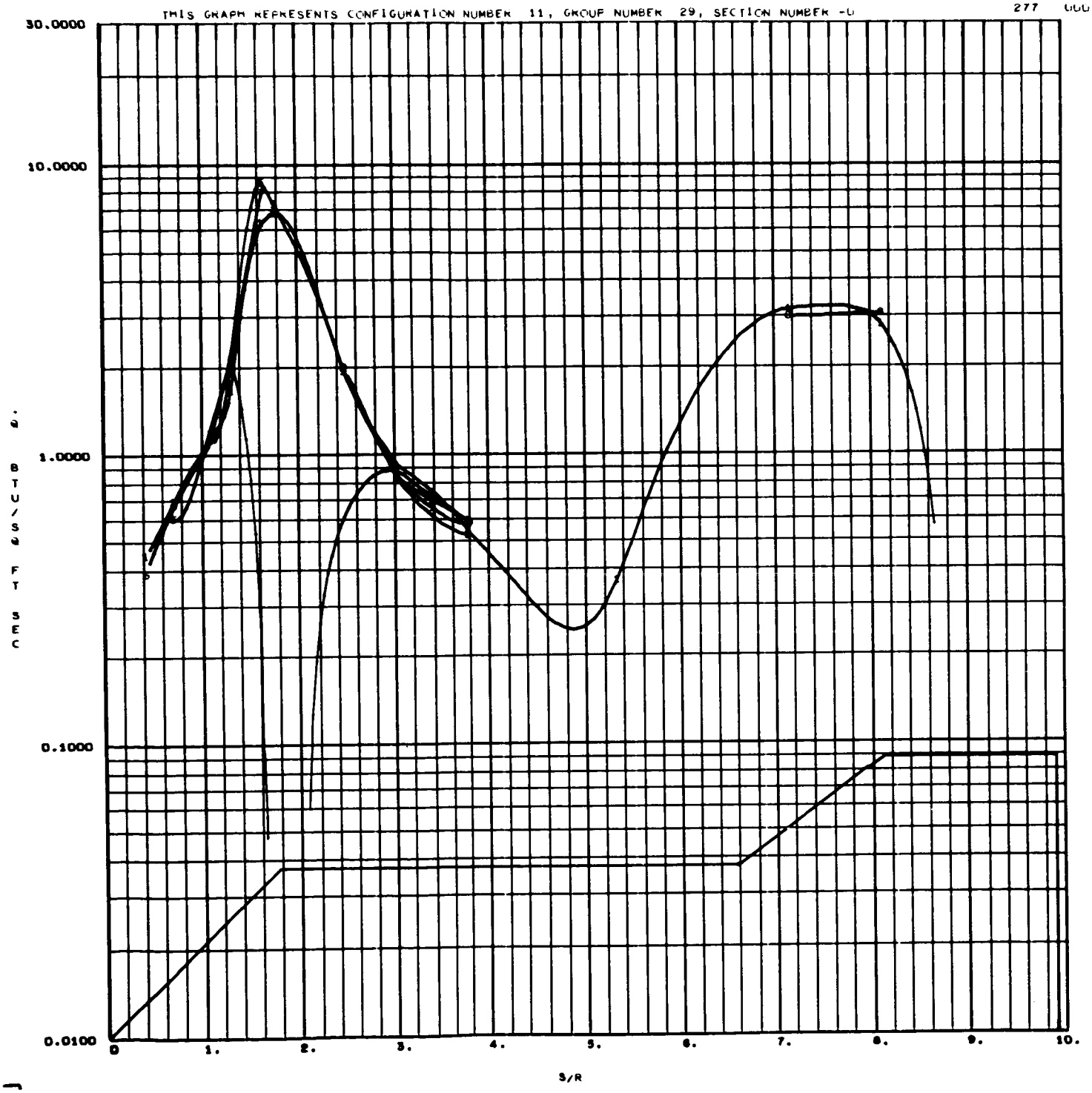
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 29
TOTAL PRESSURE 753.4 PSIA
REYNOLDS NUMBER PER INCH 0.0835 x 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1794.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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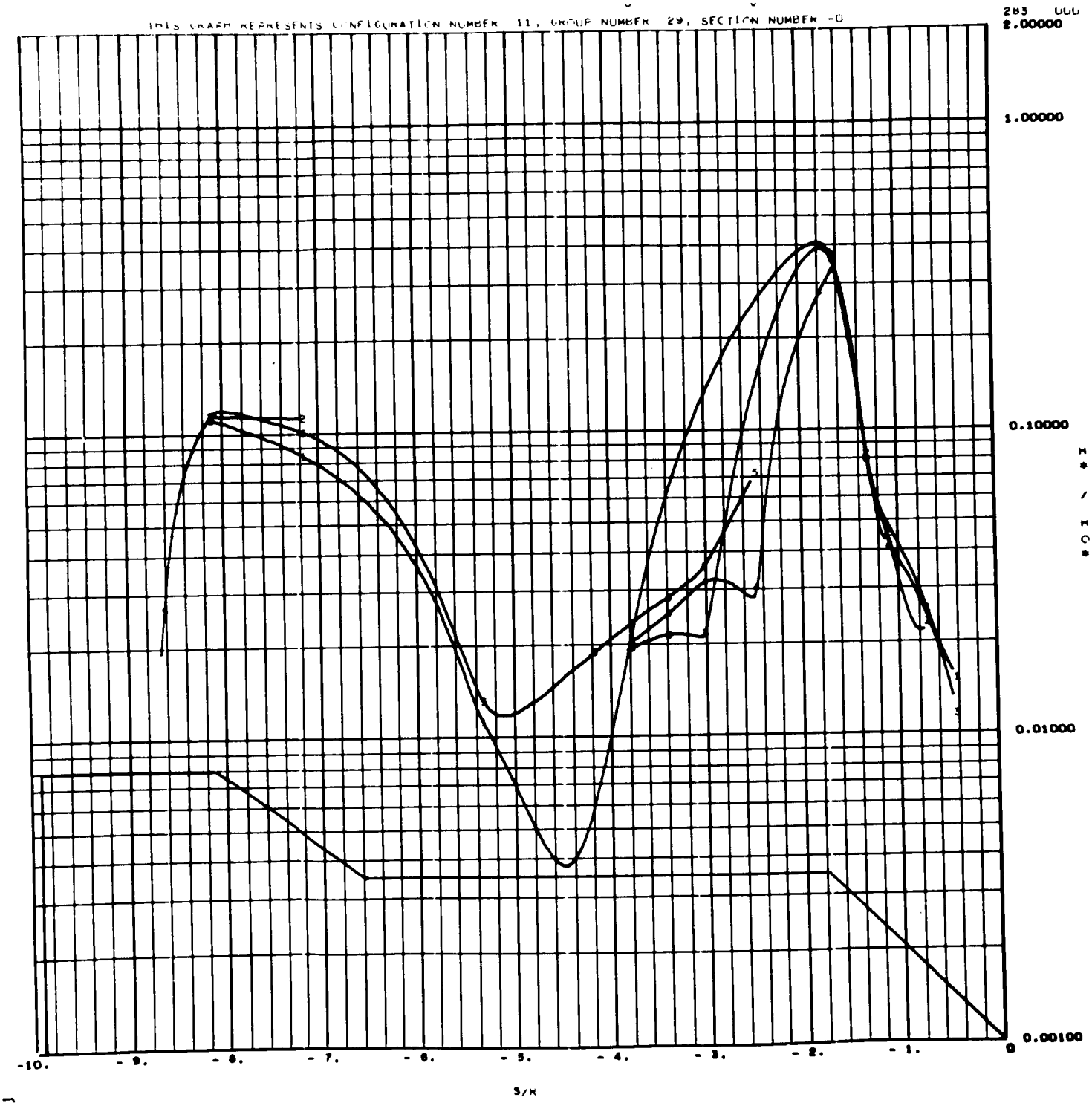
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 29
TOTAL PRESSURE 753.4 PSIA
REYNOLDS NUMBER PER INCH 0.0835 X 10^6
H_O^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1794.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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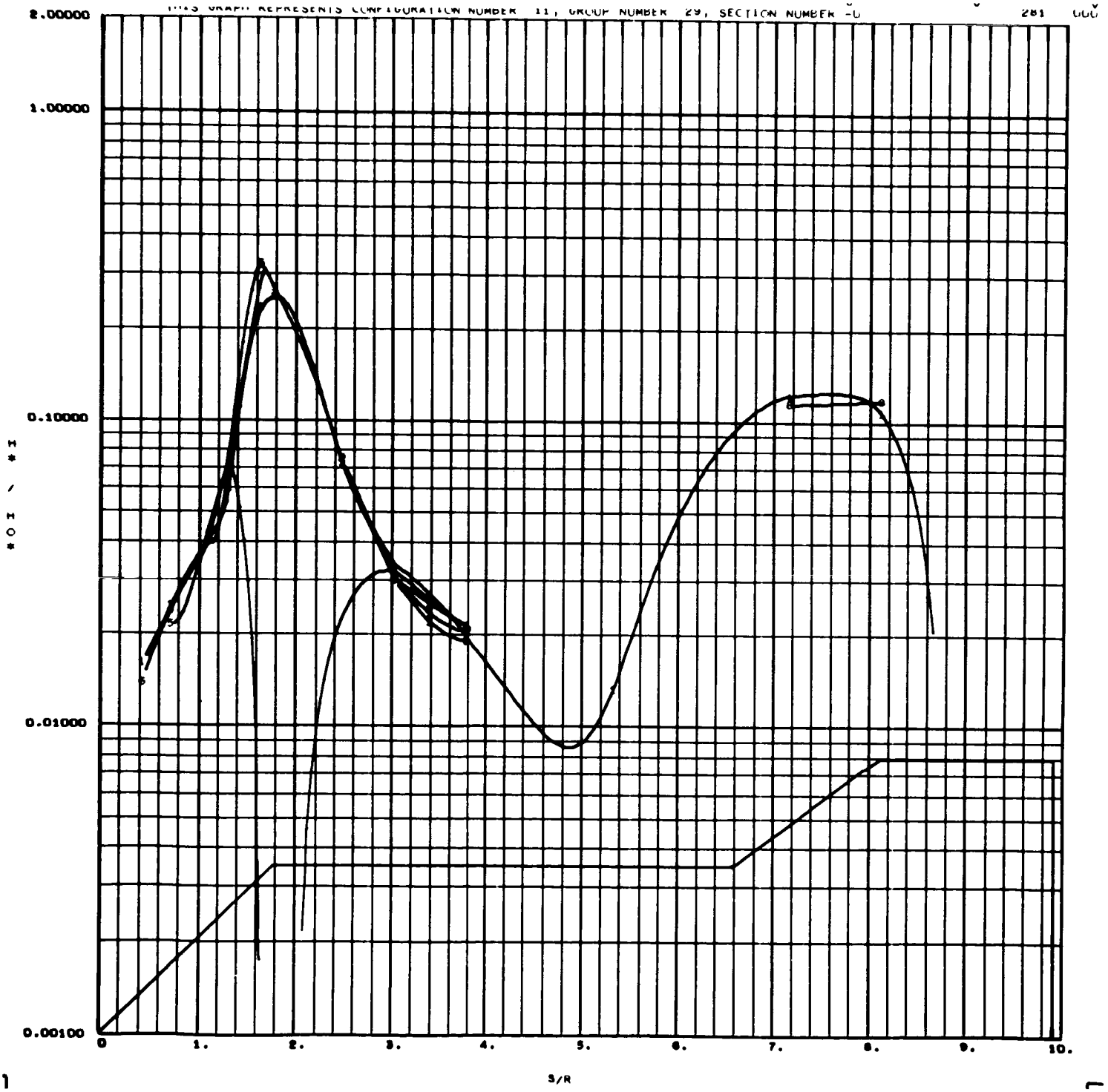
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 29
TOTAL PRESSURE 753.4 PSIA
REYNOLDS NUMBER PER INCH 0.0835 x 10^6
M_O * 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1794.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

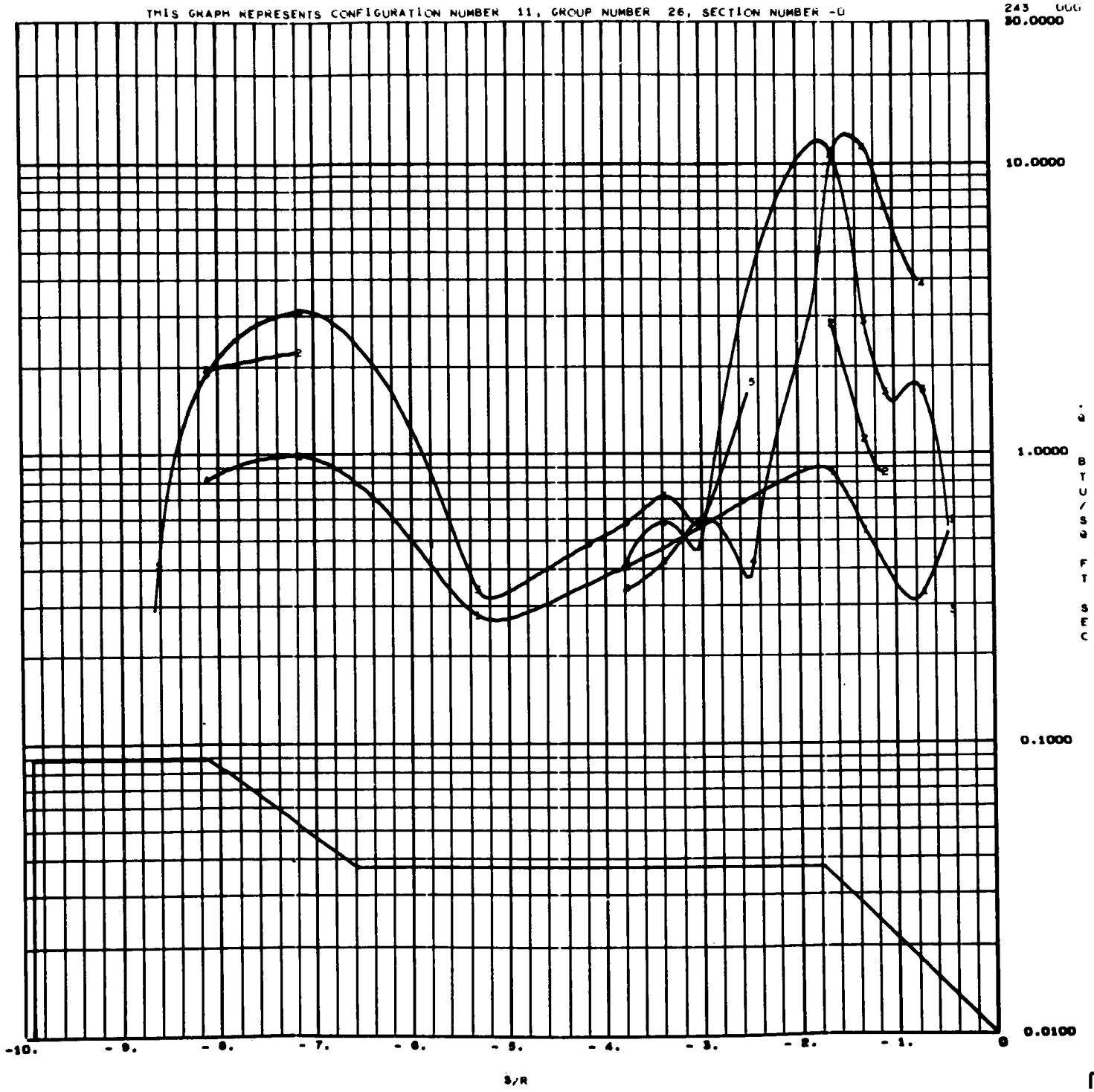
APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 26
TOTAL PRESSURE 748.9 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

	PHI	SYMBOL
	180.0	1
	225.0	2
	240.0	3
	255.0	4
	270.0	5
	225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 26, SECTION NUMBER -0



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HEAT TRANSFER TEST

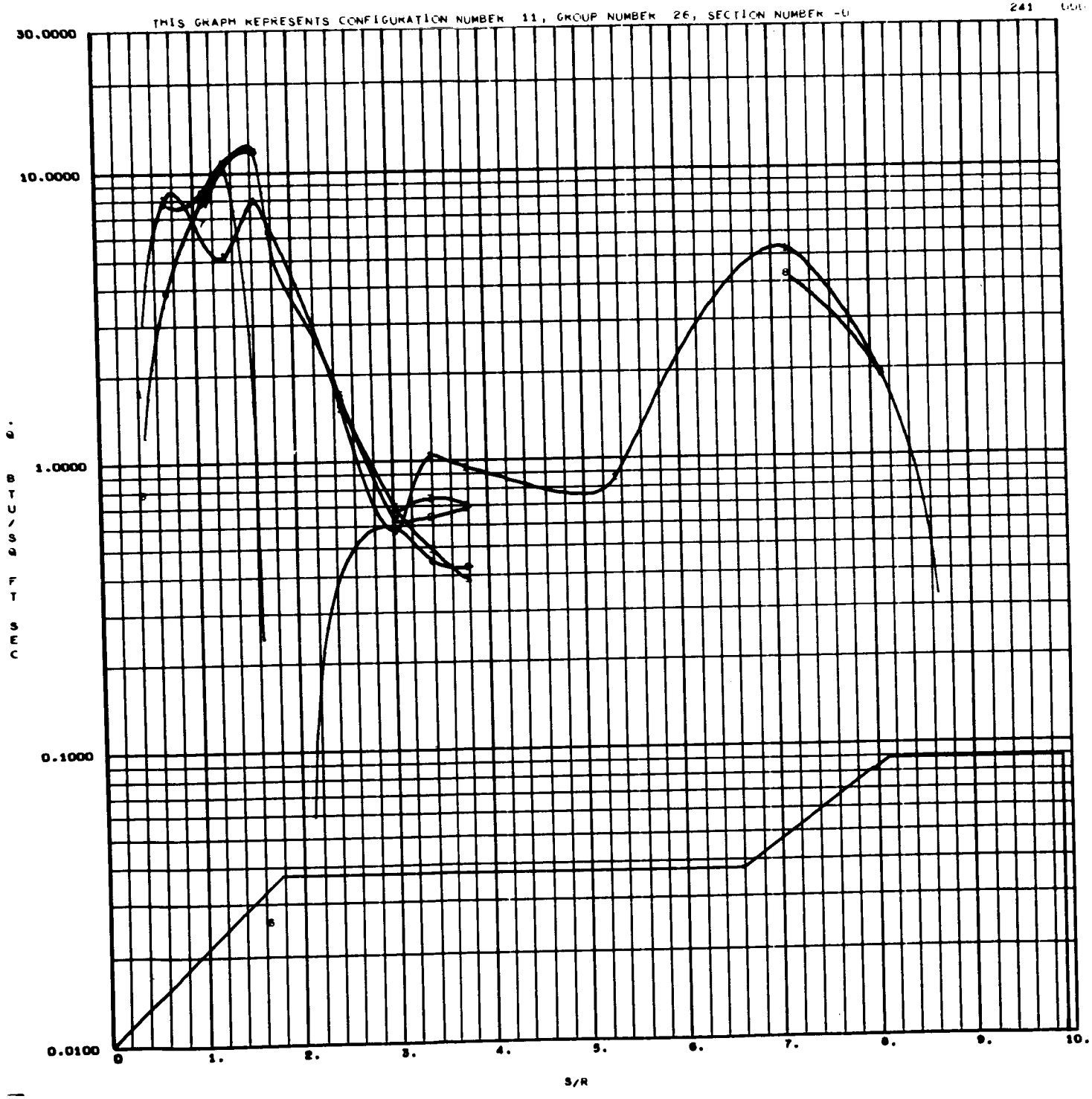
APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 26
TOTAL PRESSURE 748.9 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
μ_o* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8

241



[redacted]

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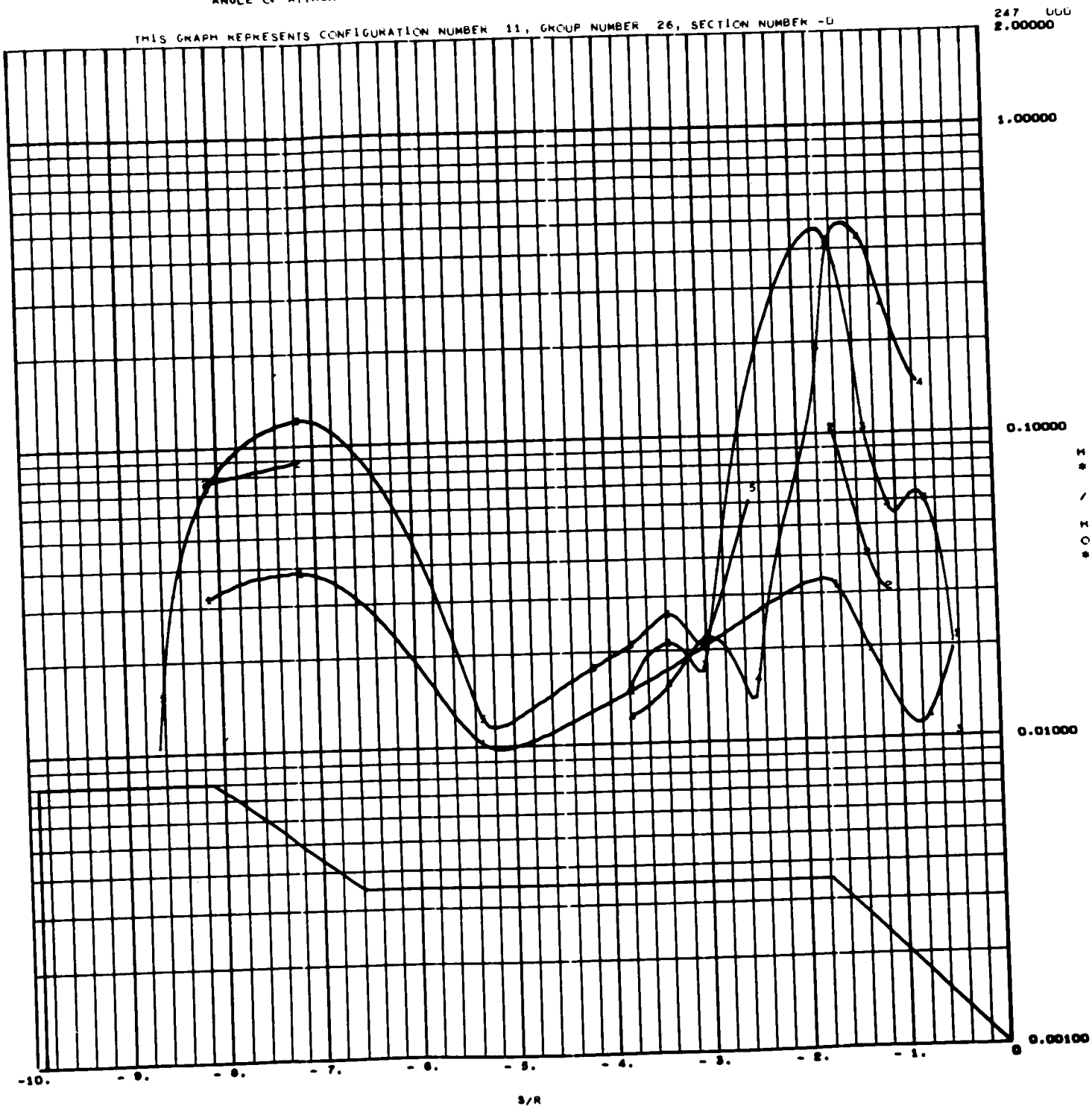
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 26
TOTAL PRESSURE 748.9 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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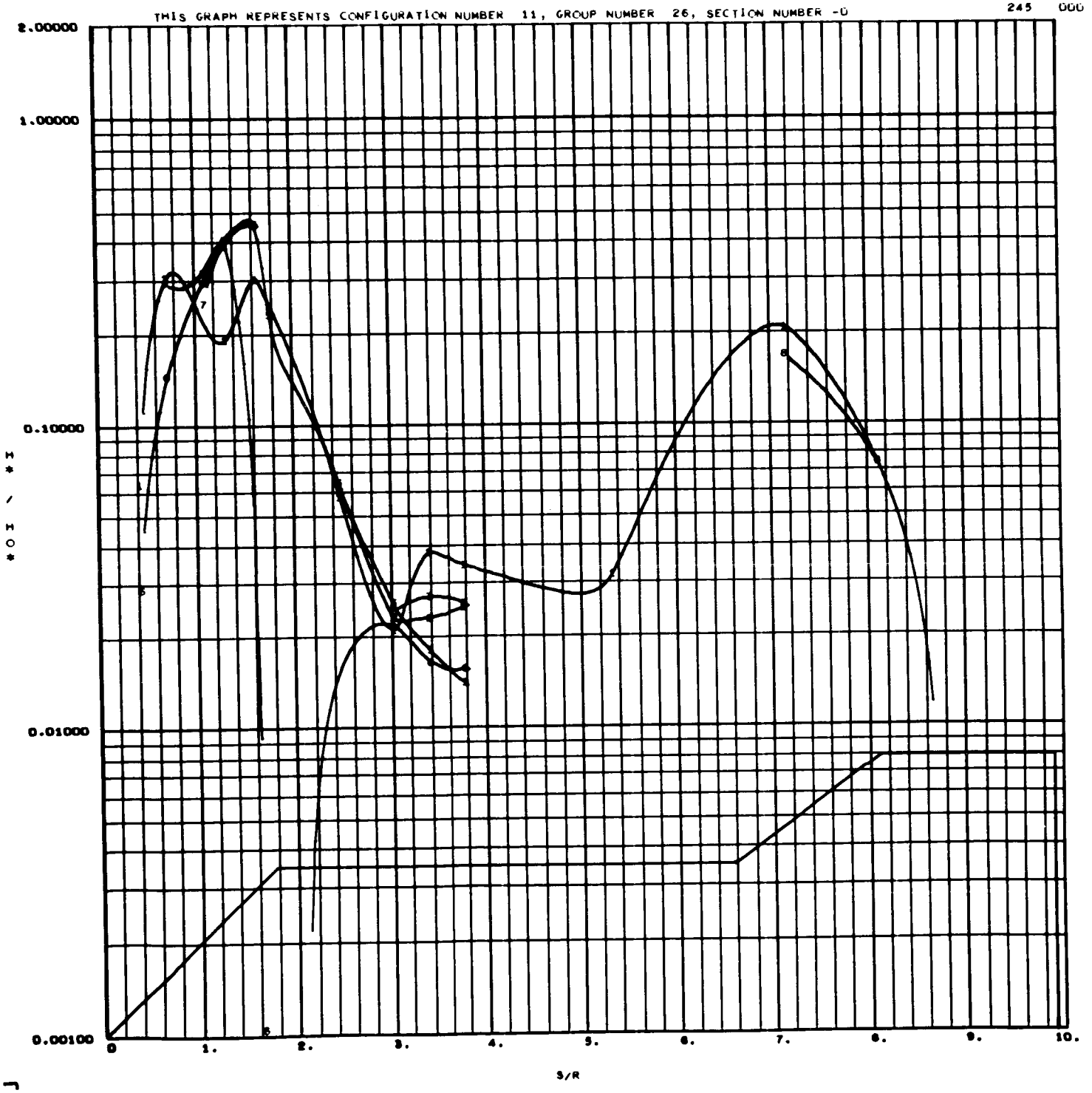
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 26
TOTAL PRESSURE 748.9 PSIA
REYNOLDS NUMBER PER INCH 0.0844 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.50 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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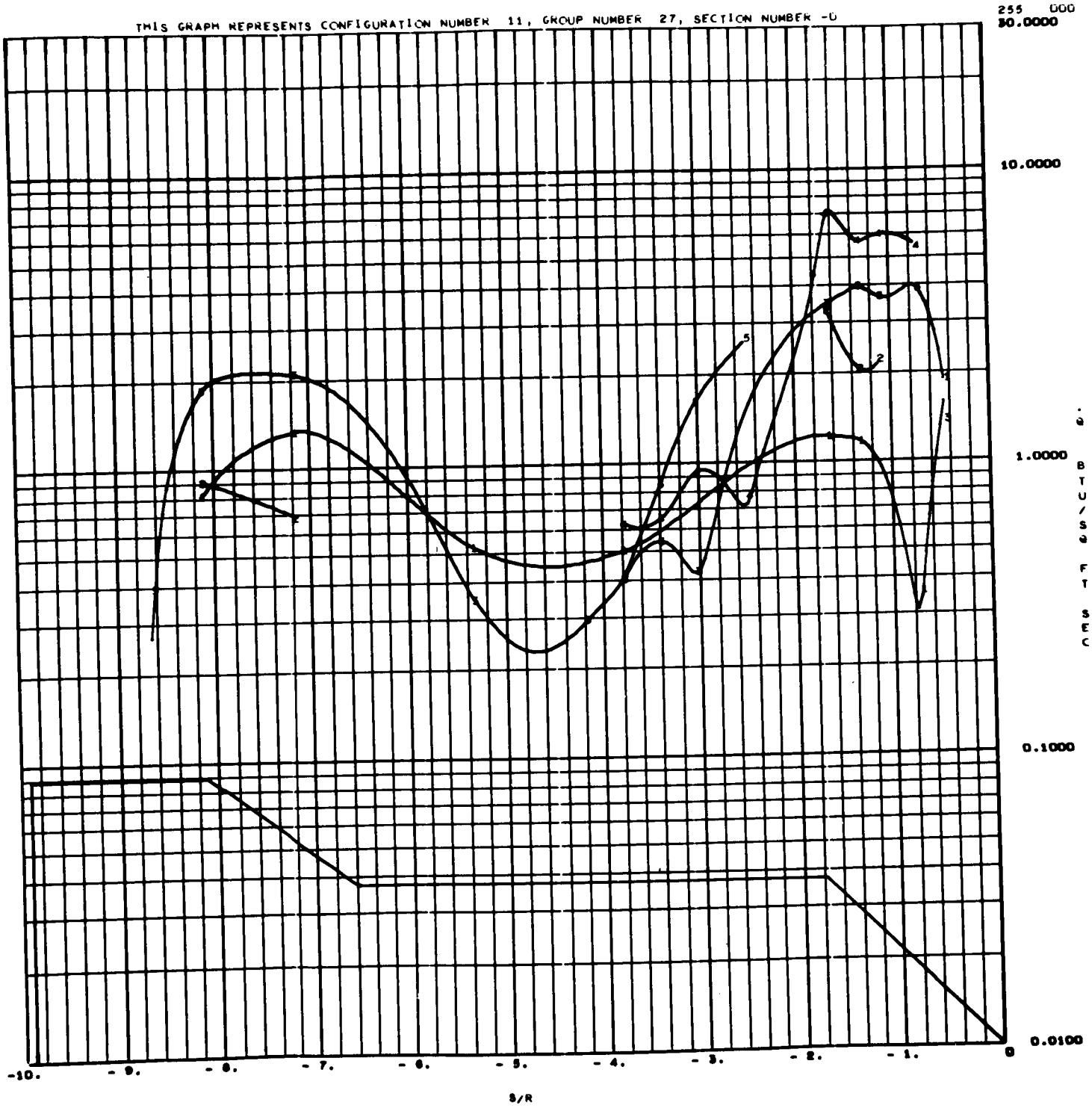
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 27
TOTAL PRESSURE 752.2 PSIA
REYNOLDS NUMBER PER INCH 0.0846 X 10^6
H_o * 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.10 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

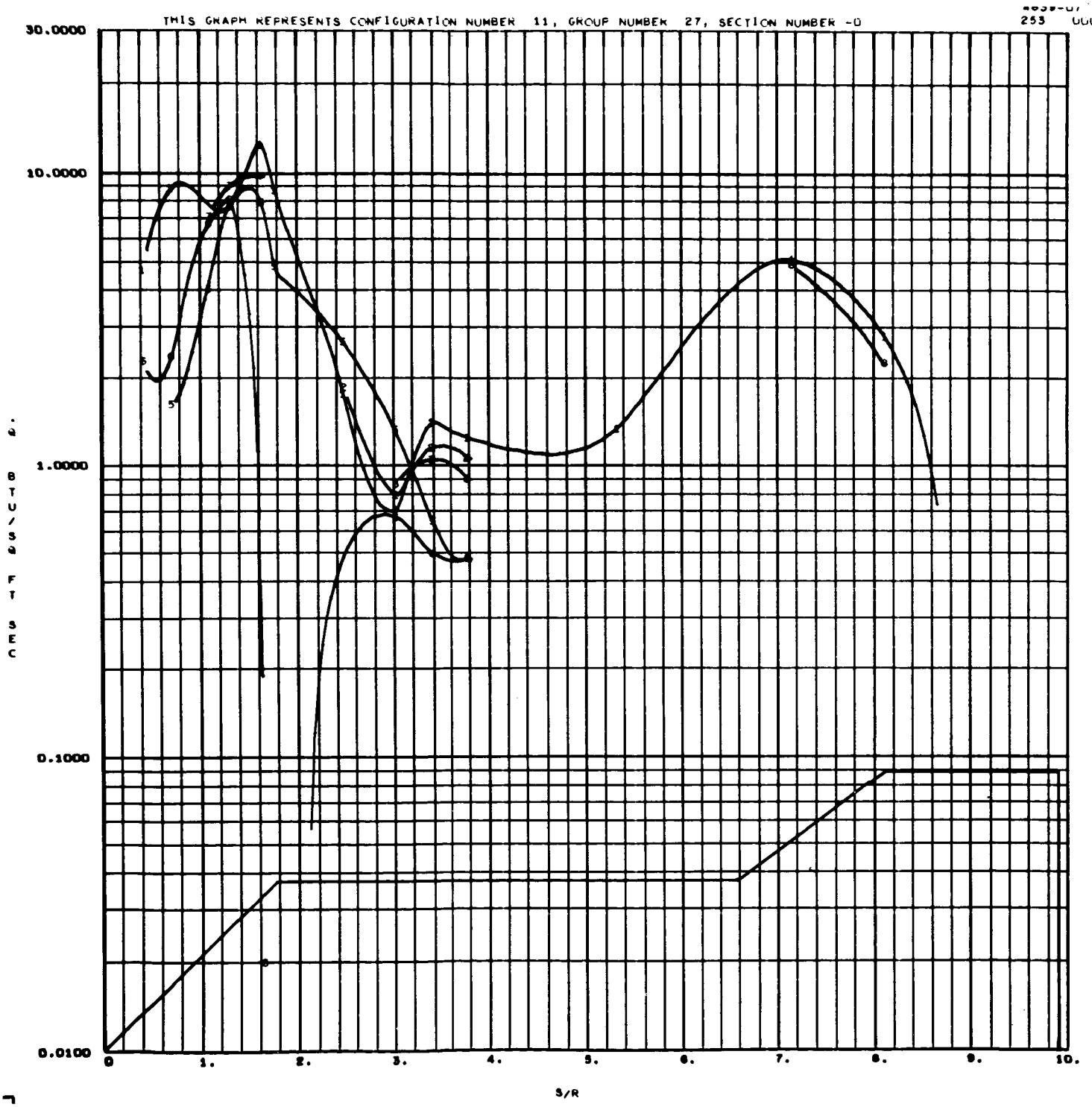
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 27
TOTAL PRESSURE 752.2 PSIA
REYNOLDS NUMBER PER INCH 0.0846 x 10^6
H_o^* 0.08133 LB/FT^2 x SEC
TOTAL TEMPERATURE 1780.10 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

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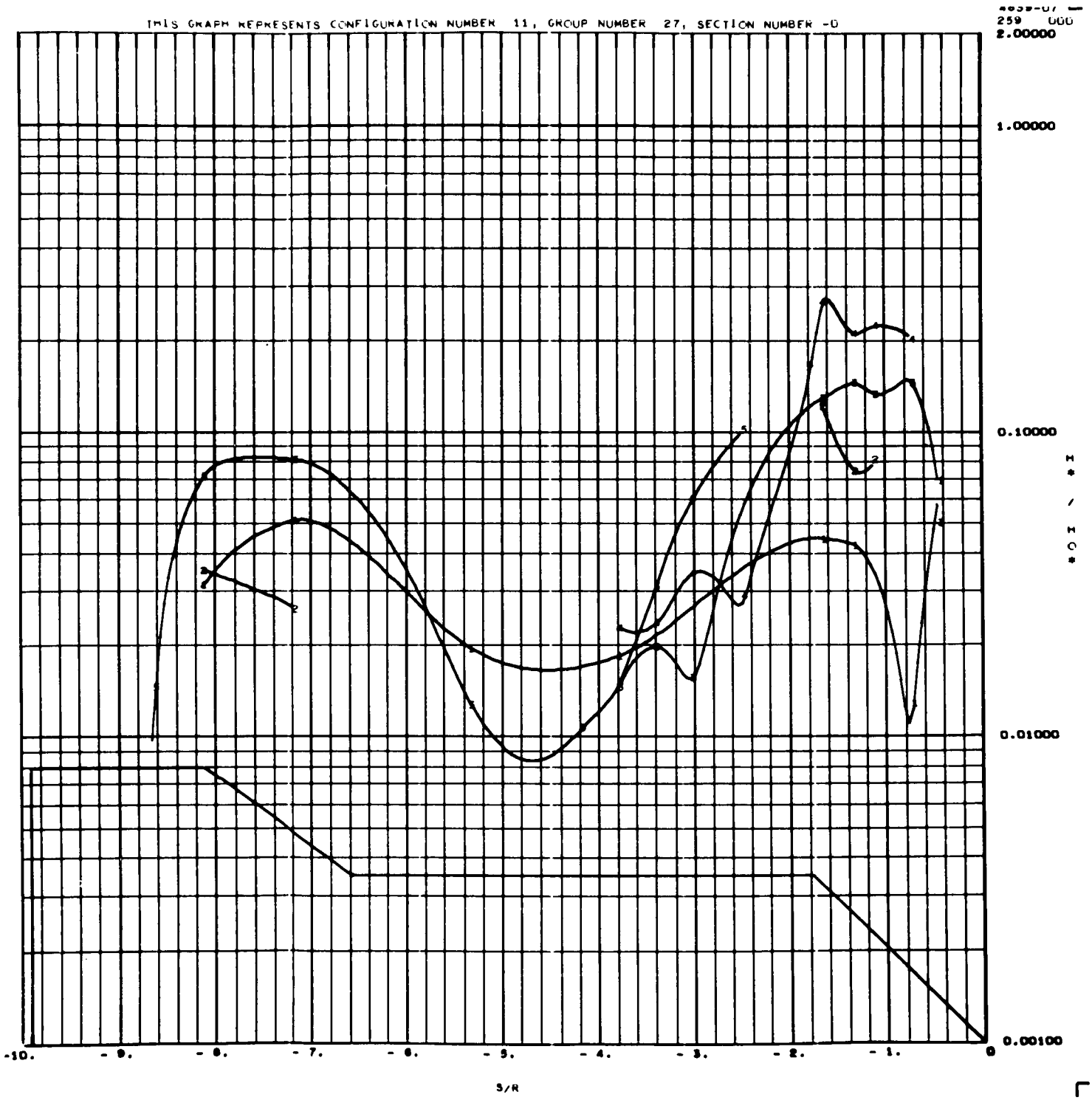
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 27
TOTAL PRESSURE 752.2 PSIA
REYNOLDS NUMBER PER INCH 0.0846 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.10 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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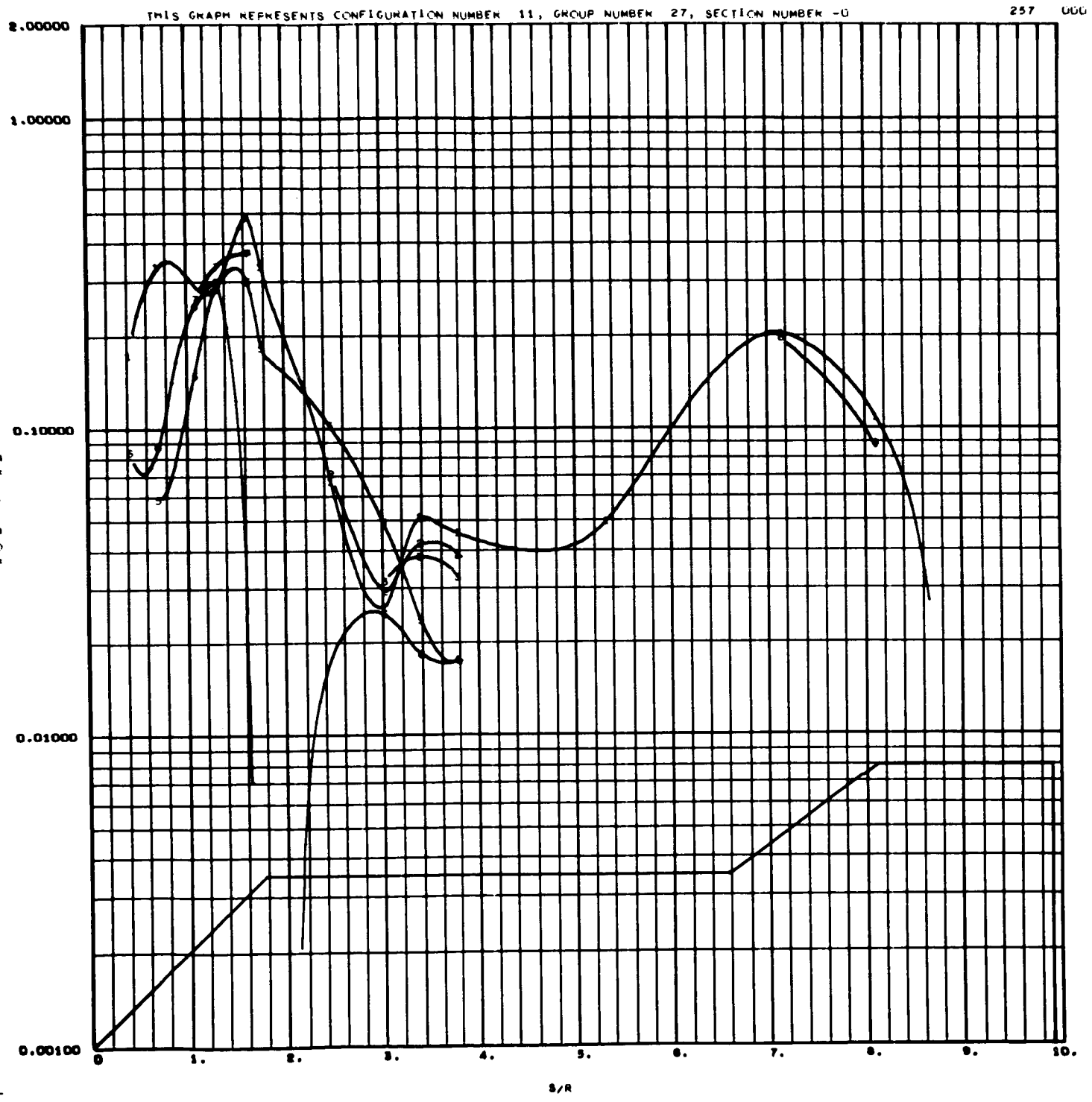
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 27
TOTAL PRESSURE 752.2 PSIA
REYNOLDS NUMBER PER INCH 0.0846 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1780.10 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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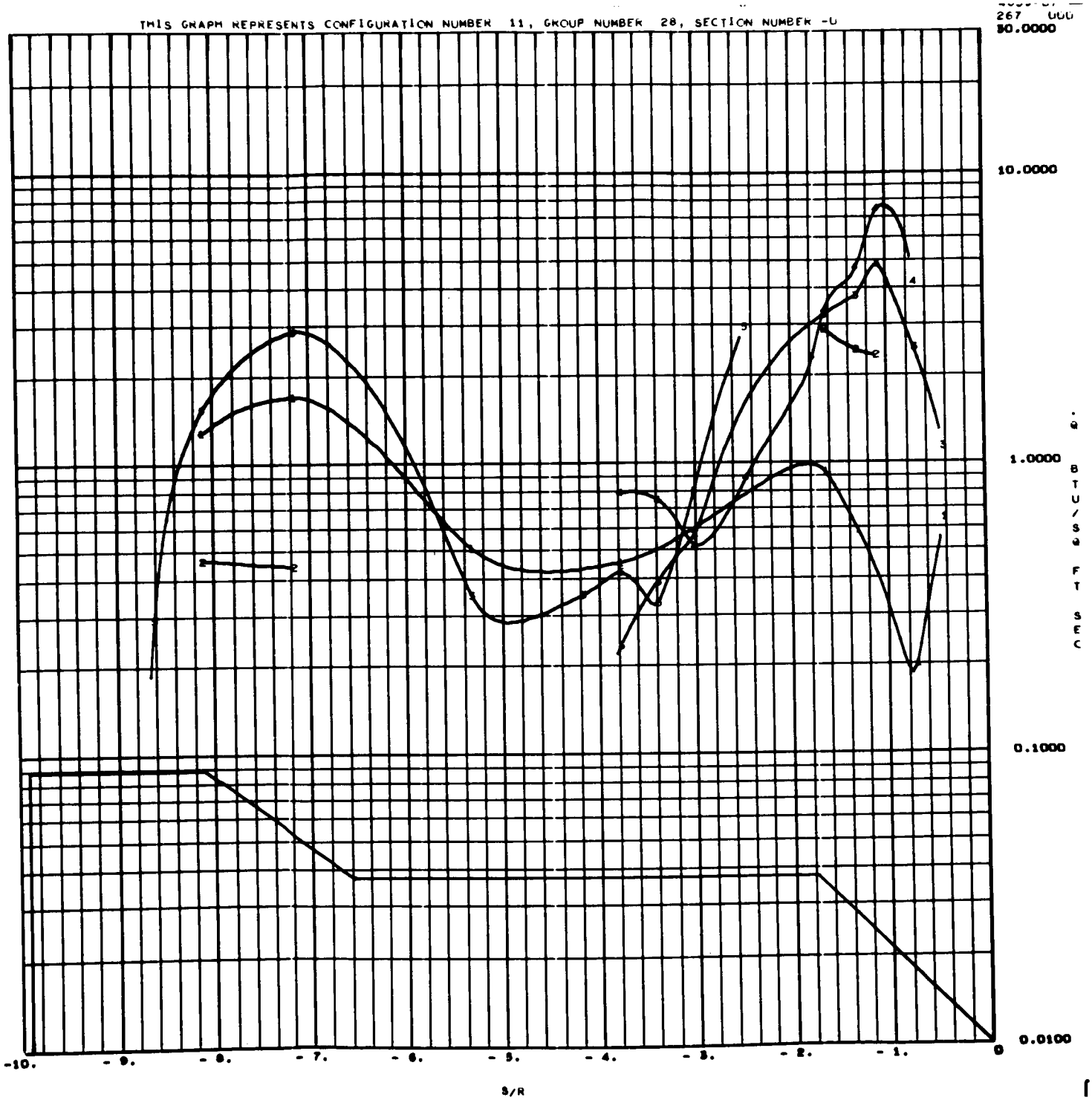
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 28
TOTAL PRESSURE 753.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1785.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

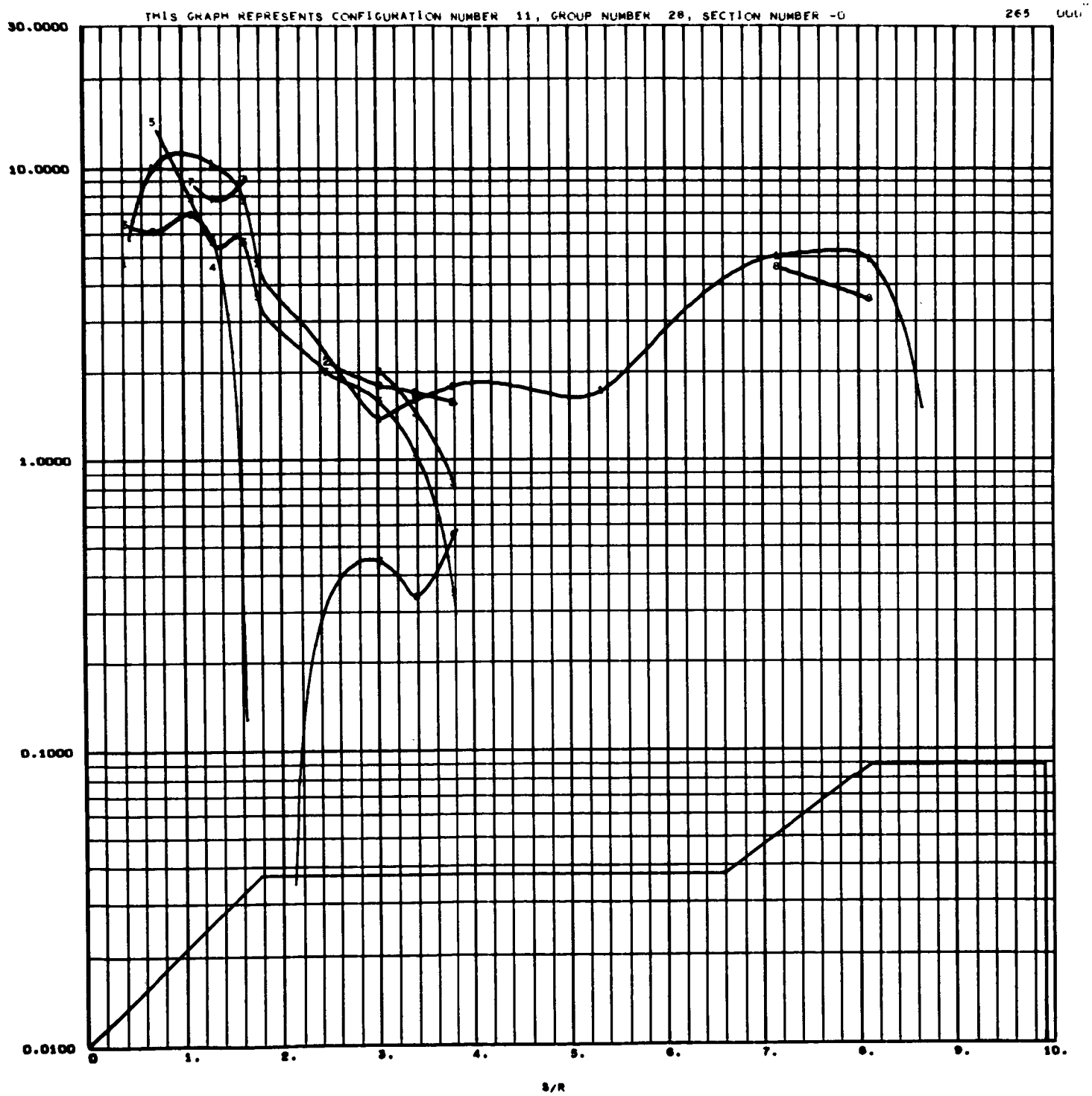
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 28
TOTAL PRESSURE 753.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1785.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

HEAT TRANSFER TEST

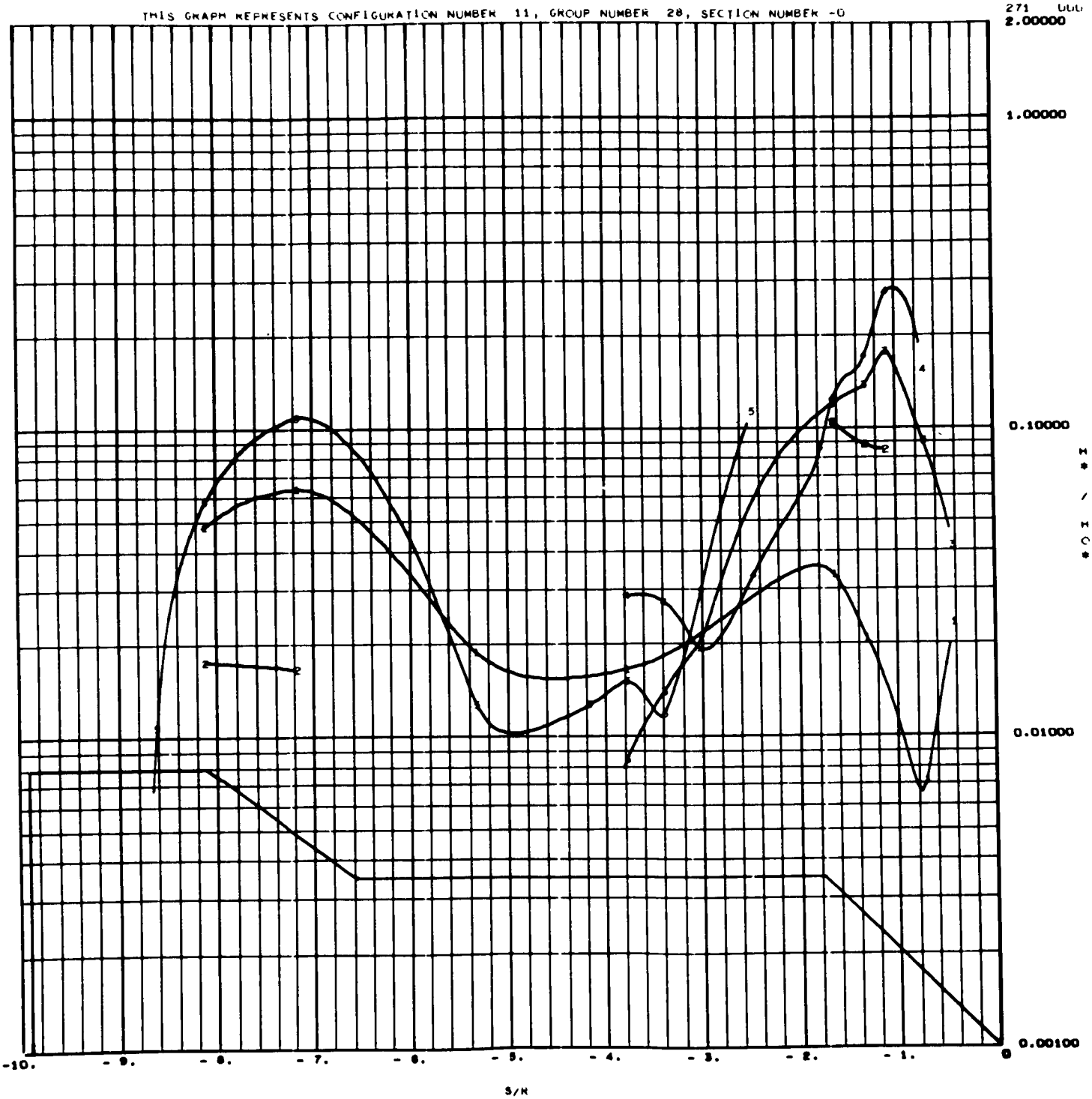
APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 28
TOTAL PRESSURE 753.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 x 10^6
H_o^* 0.08133 LB/FT x SEC
TOTAL TEMPERATURE 1785.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 28, SECTION NUMBER -0



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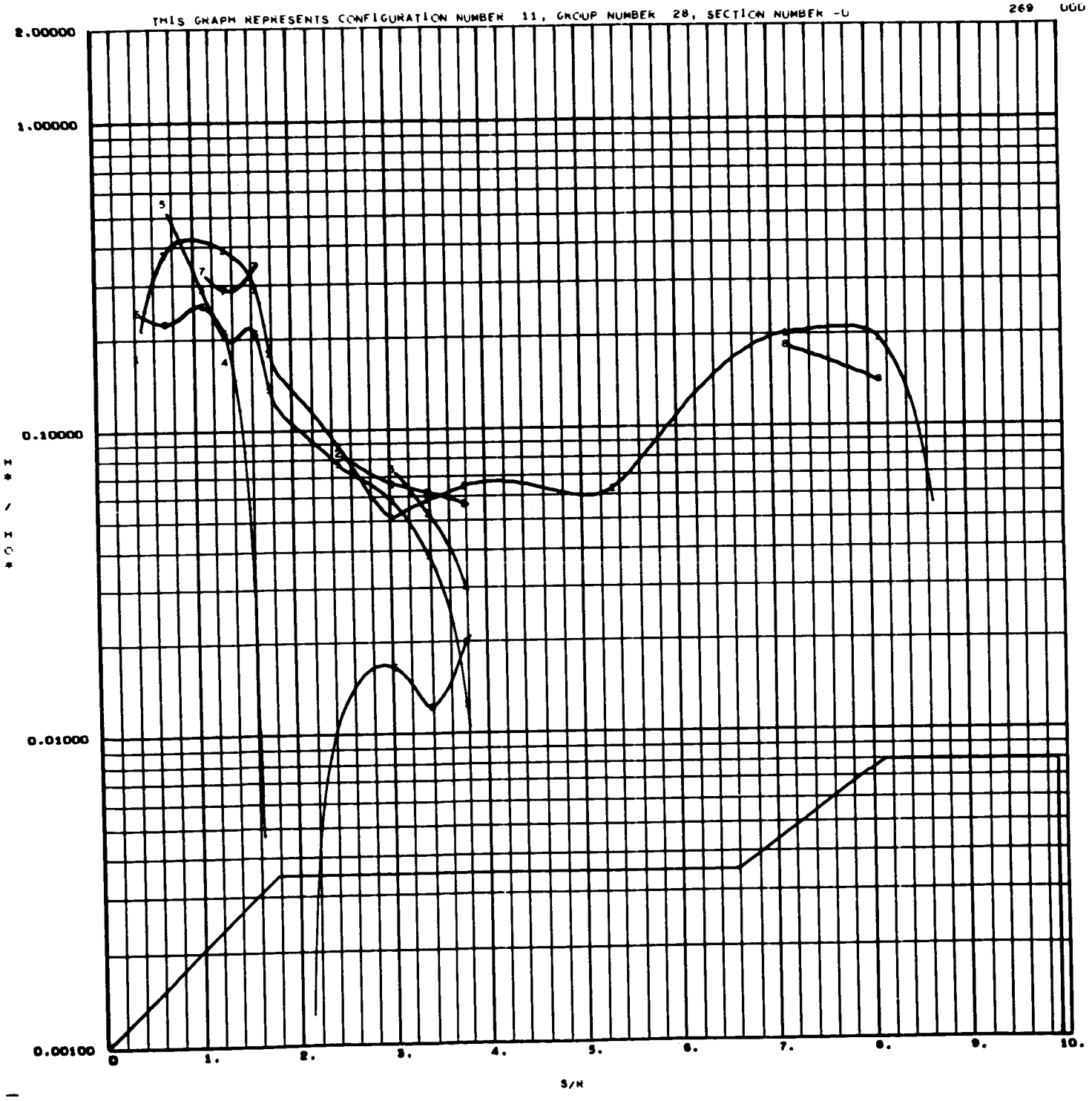
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.13
GROUP NO. 28
TOTAL PRESSURE 753.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1785.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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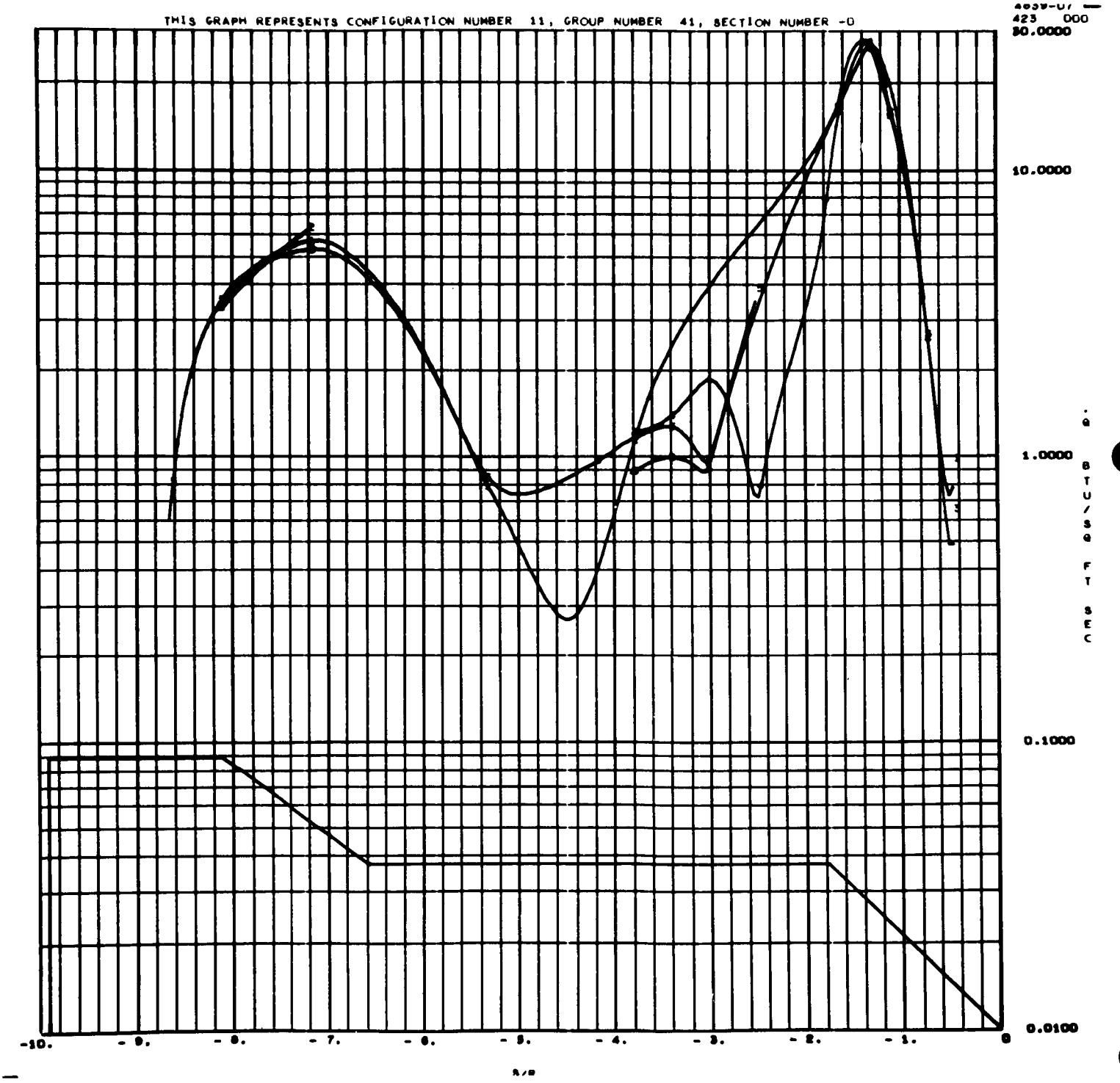
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 41
TOTAL PRESSURE 1640.5 PSIA
REYNOLDS NUMBER PER INCH 0.1695 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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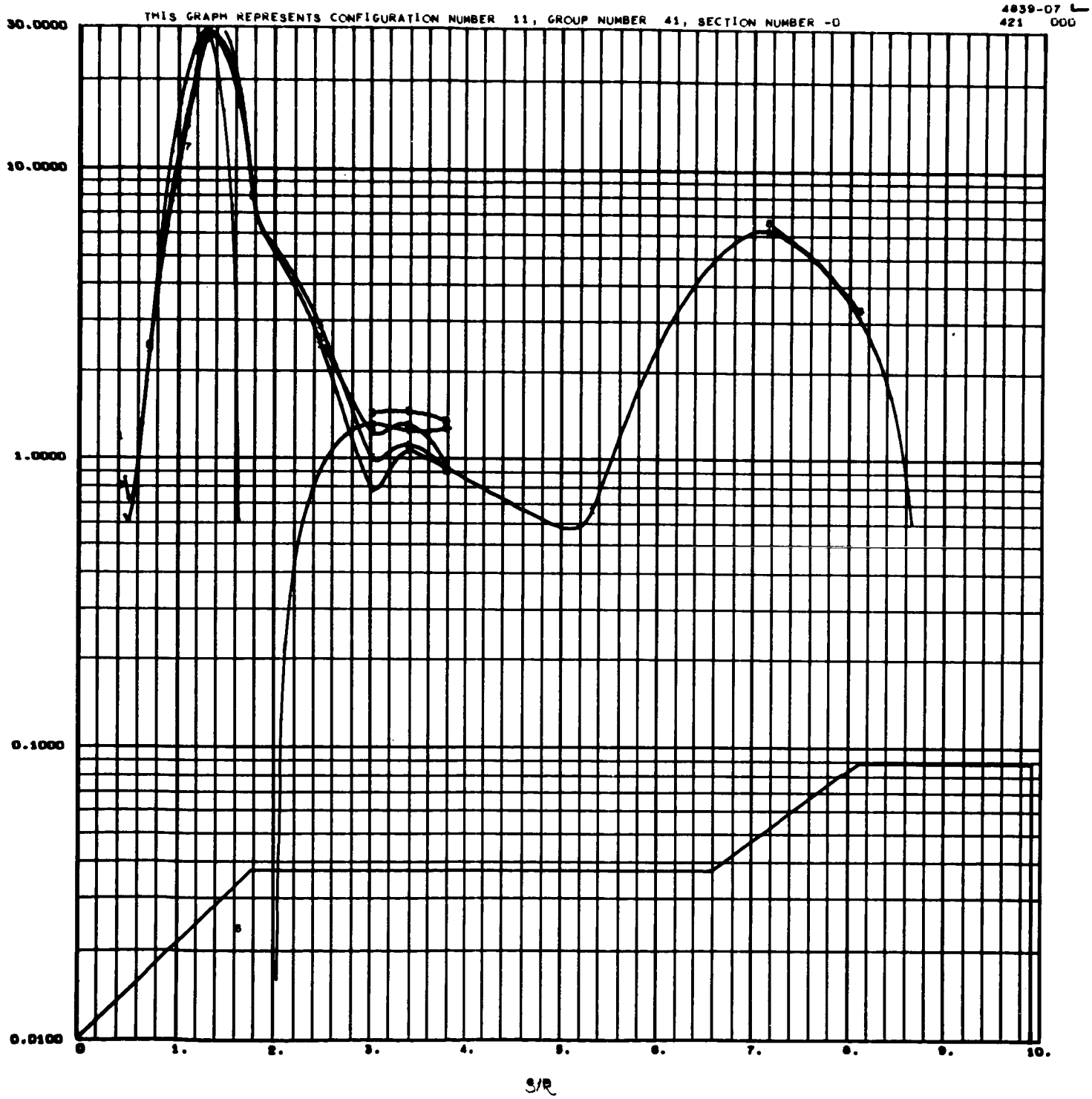
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 41
TOTAL PRESSURE 1640.5 PSIA
REYNOLDS NUMBER PER INCH 0.1695 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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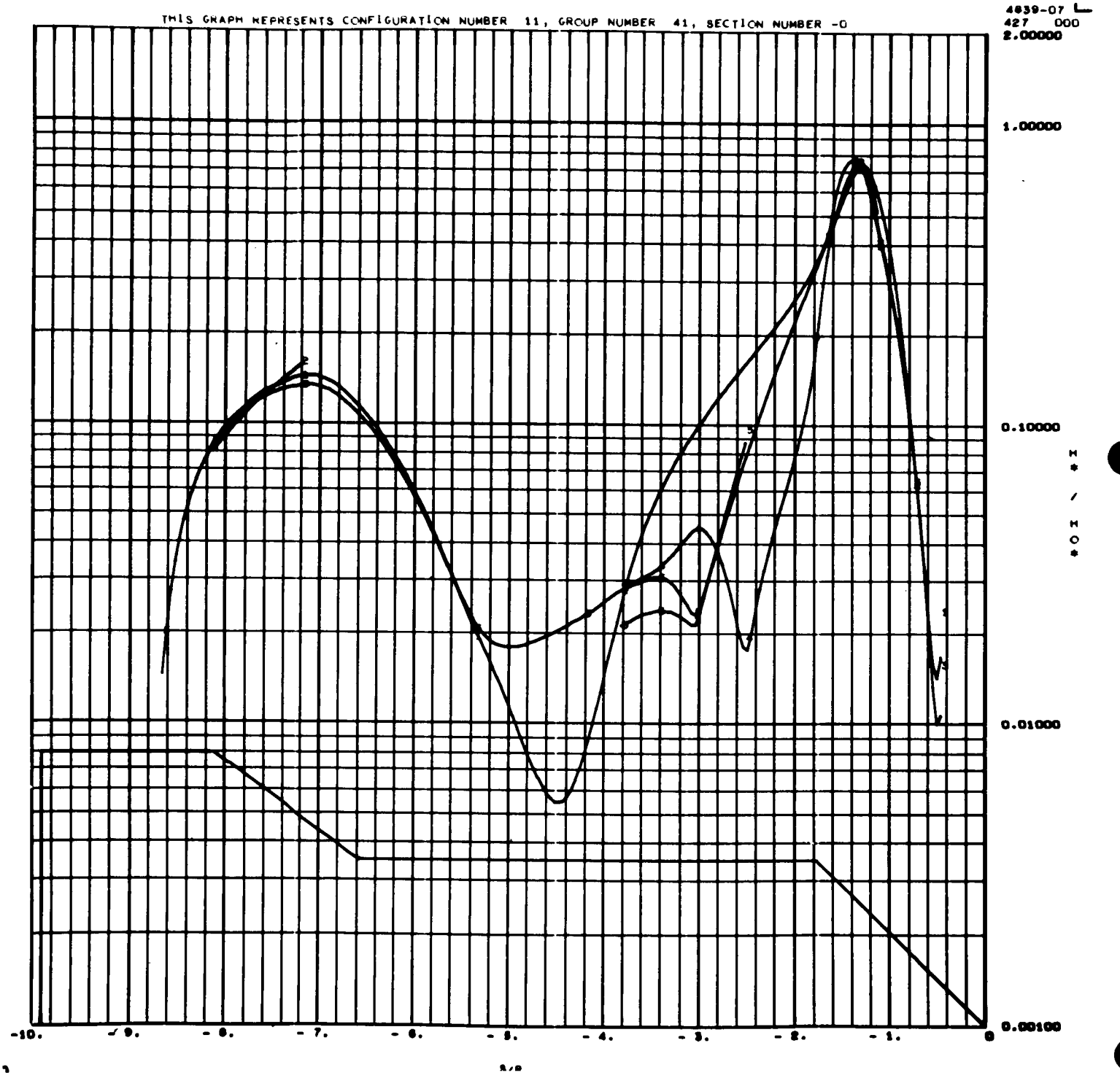
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 41
TOTAL PRESSURE 1640.5 PSIA
REYNOLDS NUMBER PER INCH 0.1695 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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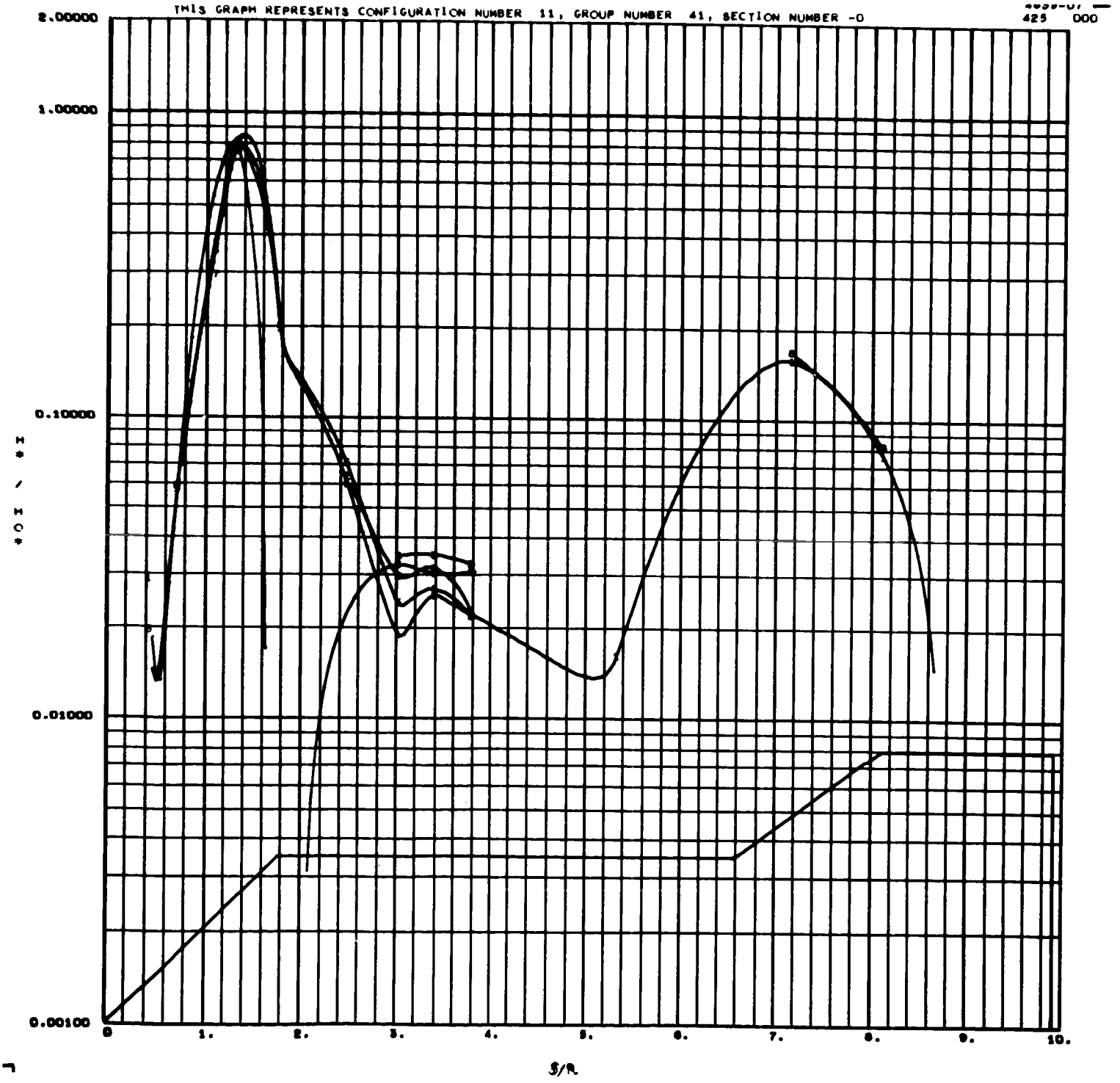
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 41
TOTAL PRESSURE 1640.5 PSIA
REYNOLDS NUMBER PER INCH 0.1695 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1868.70 DEGREES RANKINE
ANGLE OF ATTACK 0.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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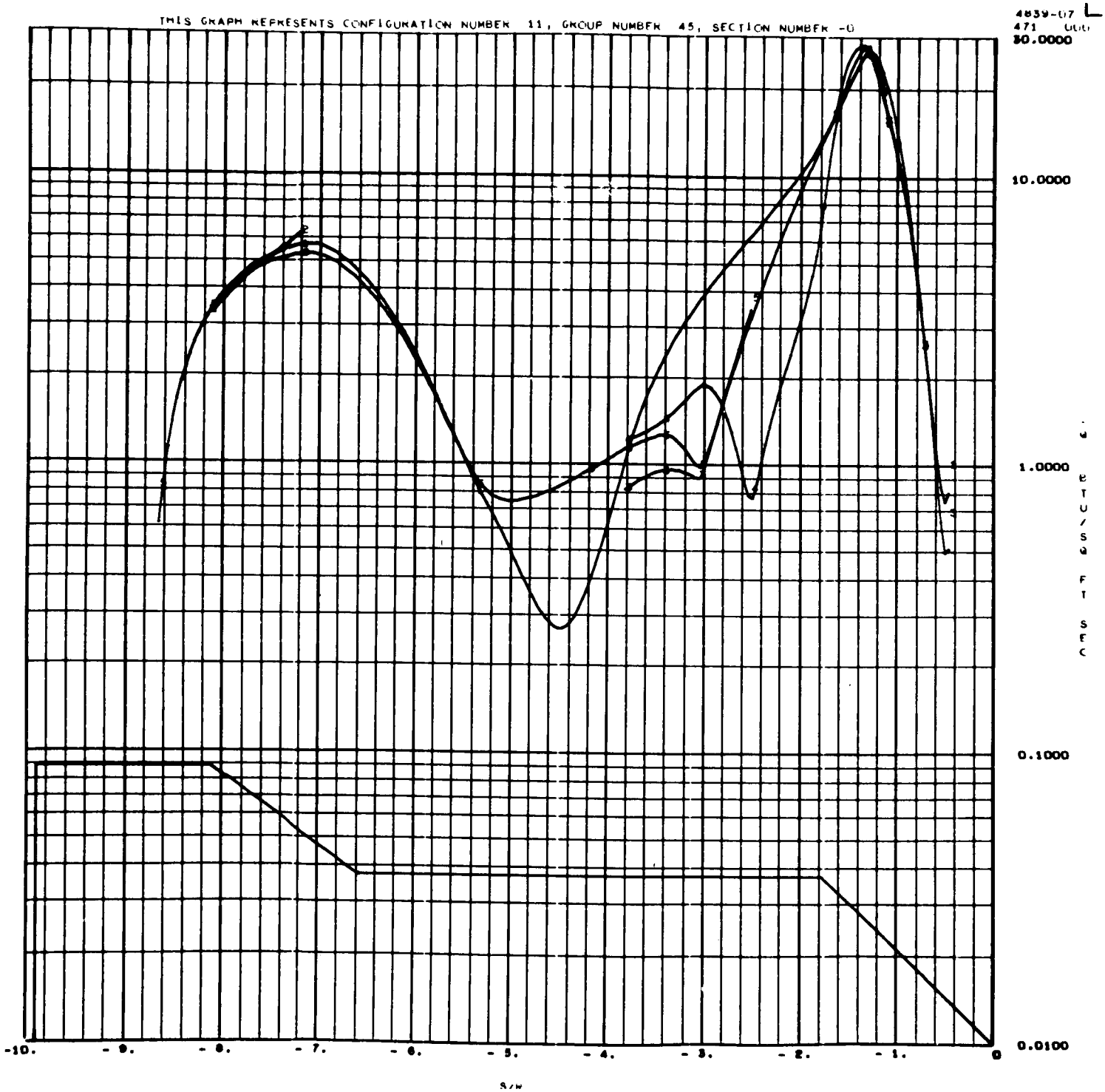
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 45
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1705 X 10^6
M_O* 0.11512 LB/FT^2 X SEC
TOTAL TEMPERATURE 1875.10 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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[redacted]

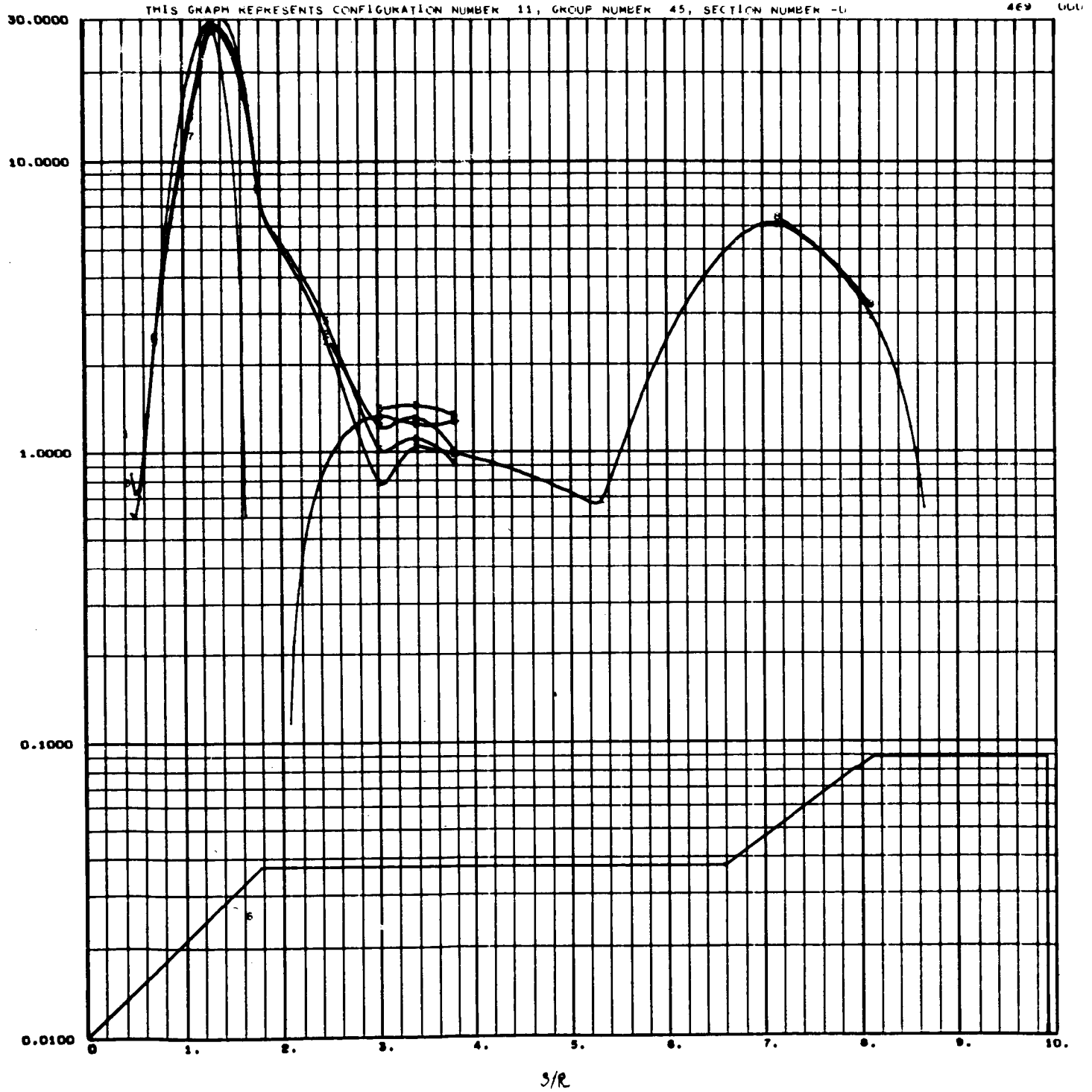
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 45
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1705 X 10^6
M_O* 0.11512 LB/FT^2 X SEC
TOTAL TEMPERATURE 1875.10 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

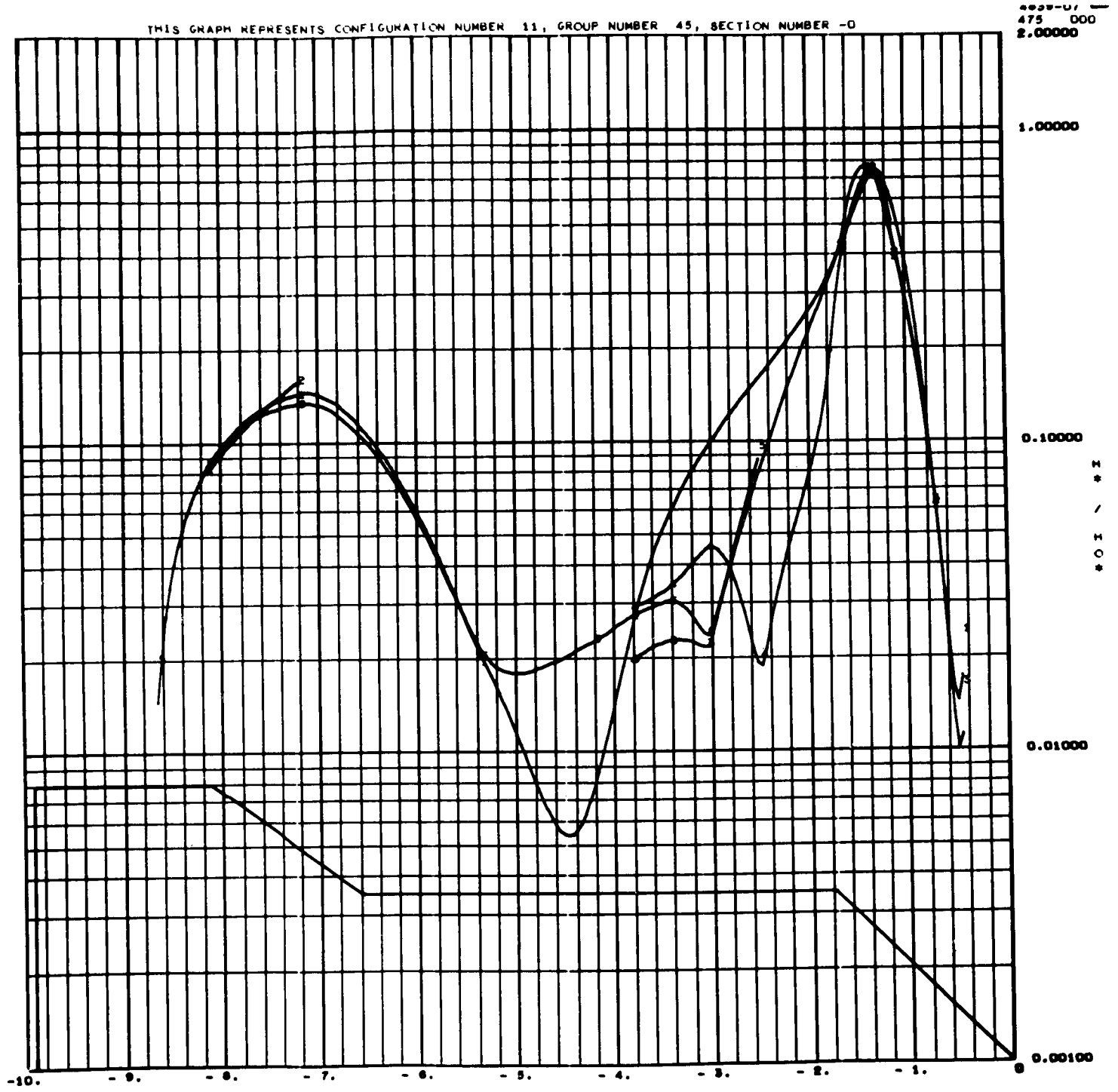
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 45
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1705 X 10^6
H_c^* 0.11512 LB/FT^2 X SEC
TOTAL TEMPERATURE 1875.10 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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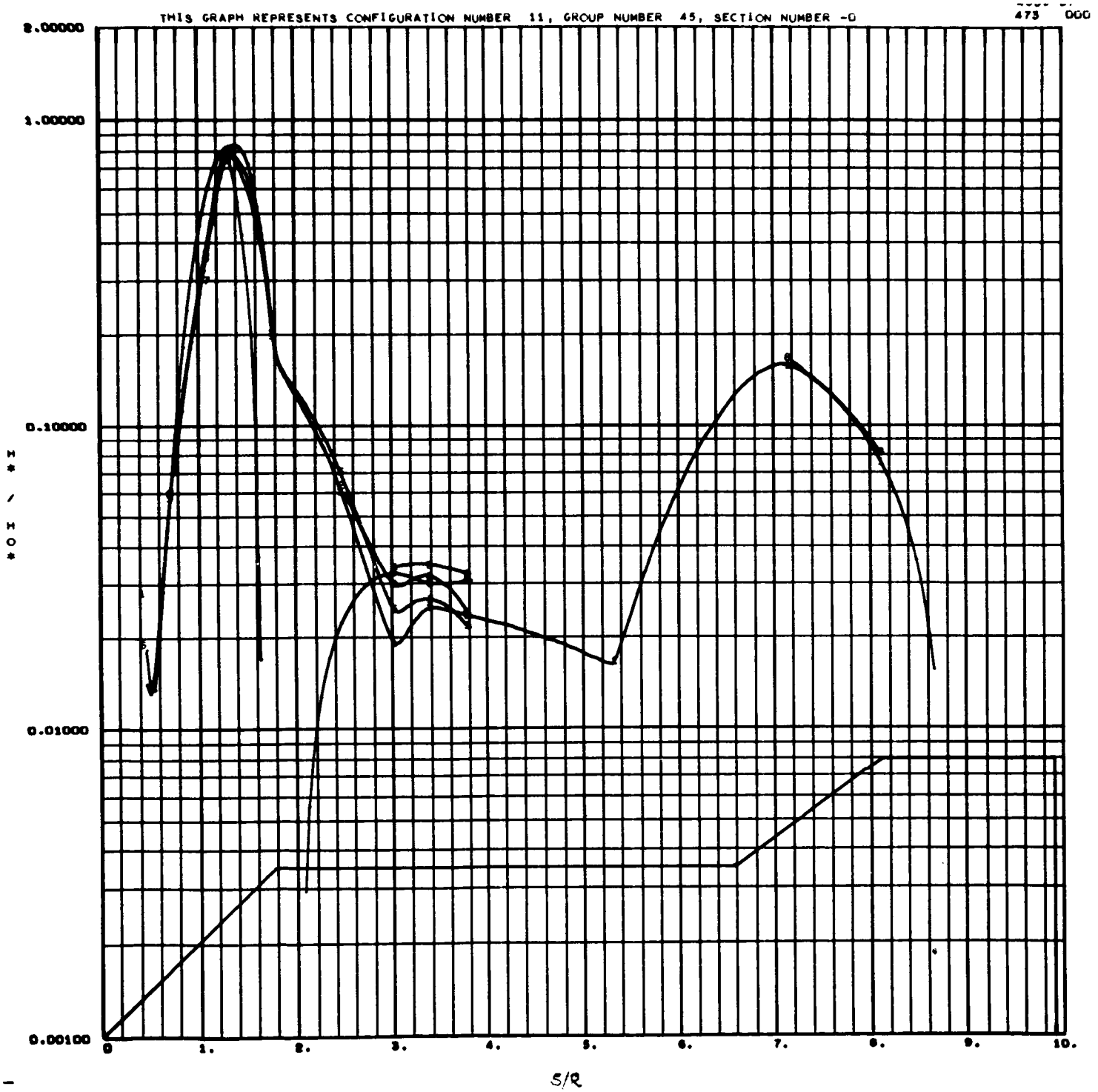
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 45
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1705 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1875.10 DEGREES RANKINE
ANGLE OF ATTACK 0. DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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HEAT TRANSFER TEST

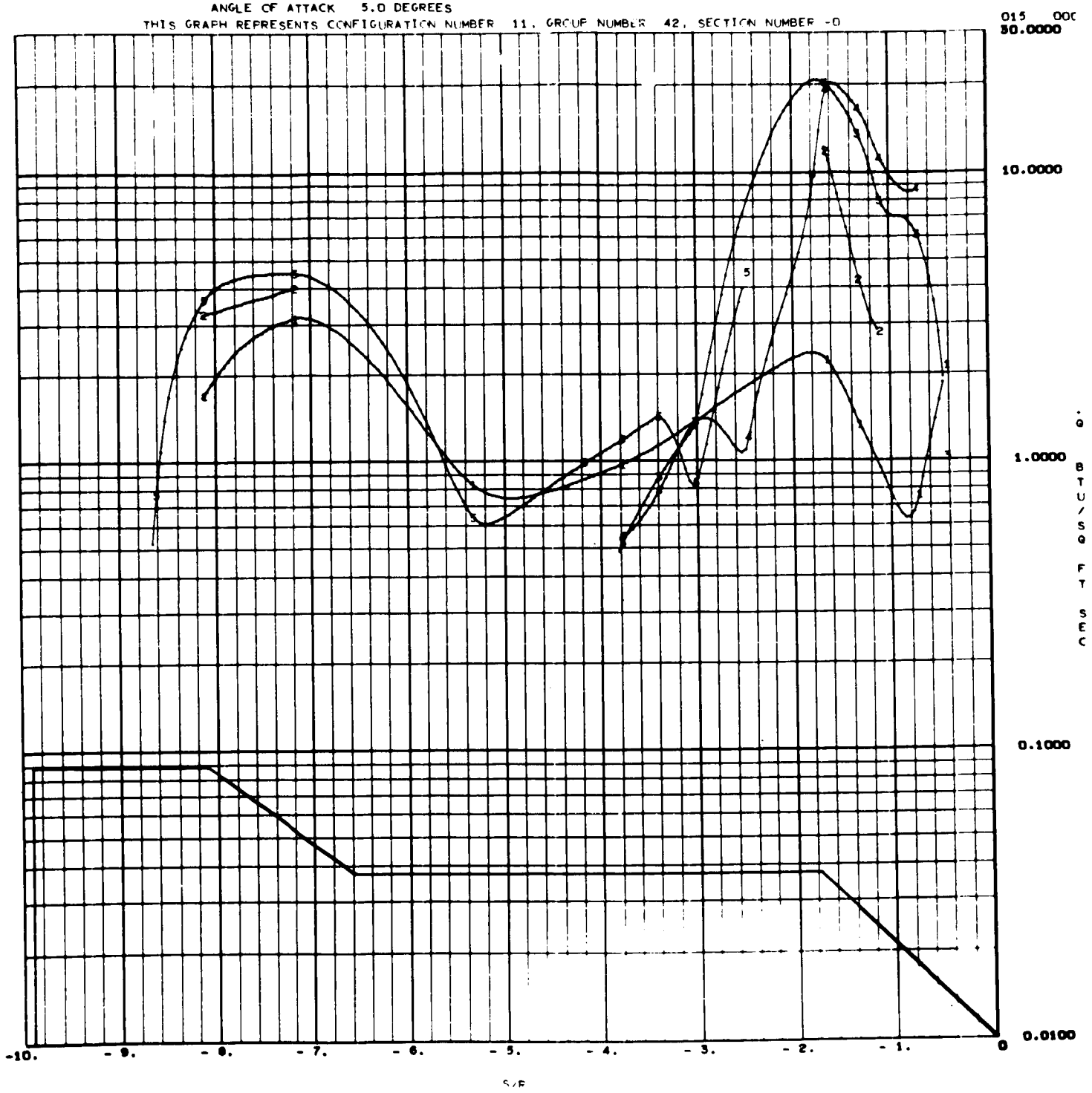
APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 42
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1714 X 10^6
H_o * 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1869.90 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 42, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

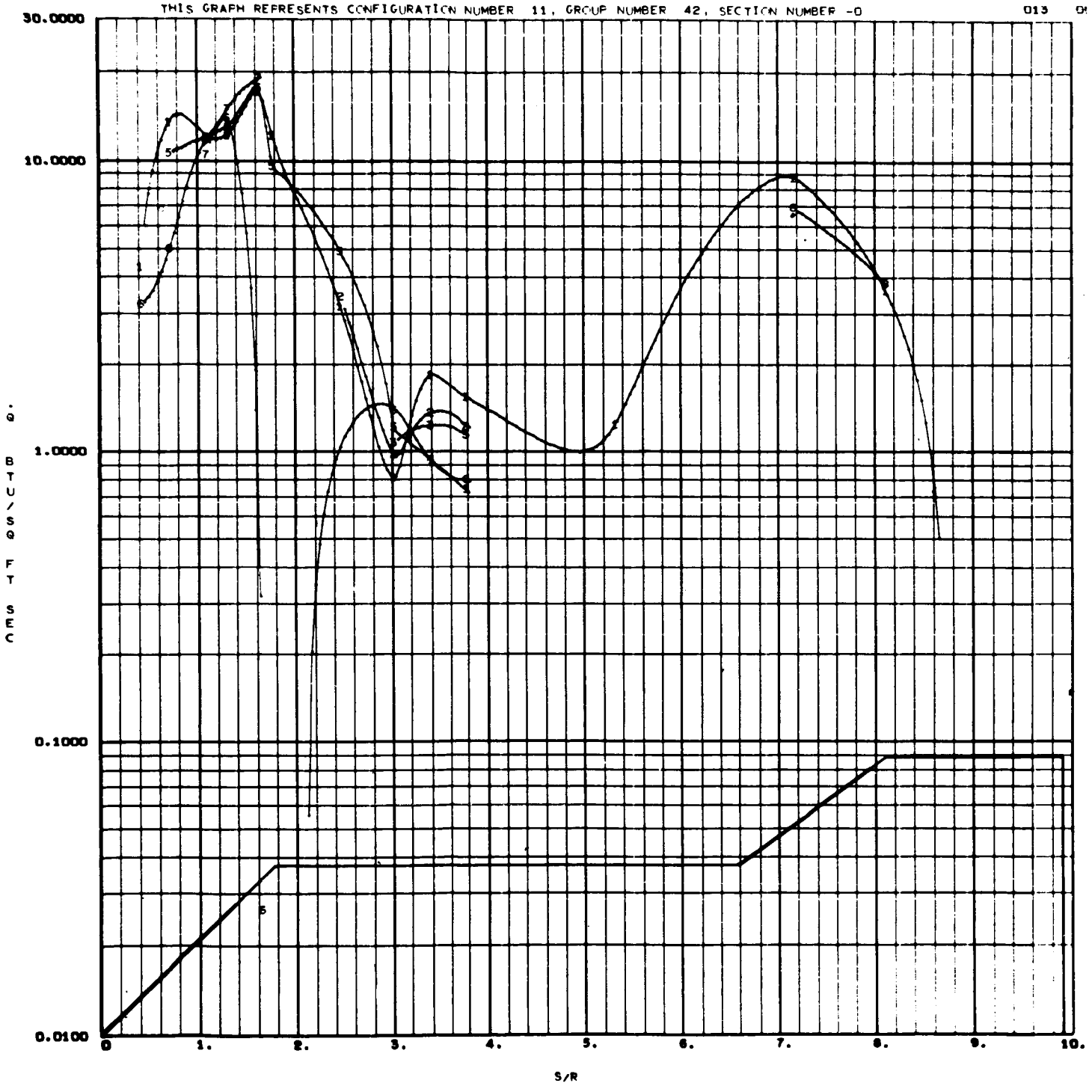
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 42
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1714 X 10^6
H_o* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1869.90 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 42, SECTION NUMBER -0

013



[redacted]

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HEAT TRANSFER TEST

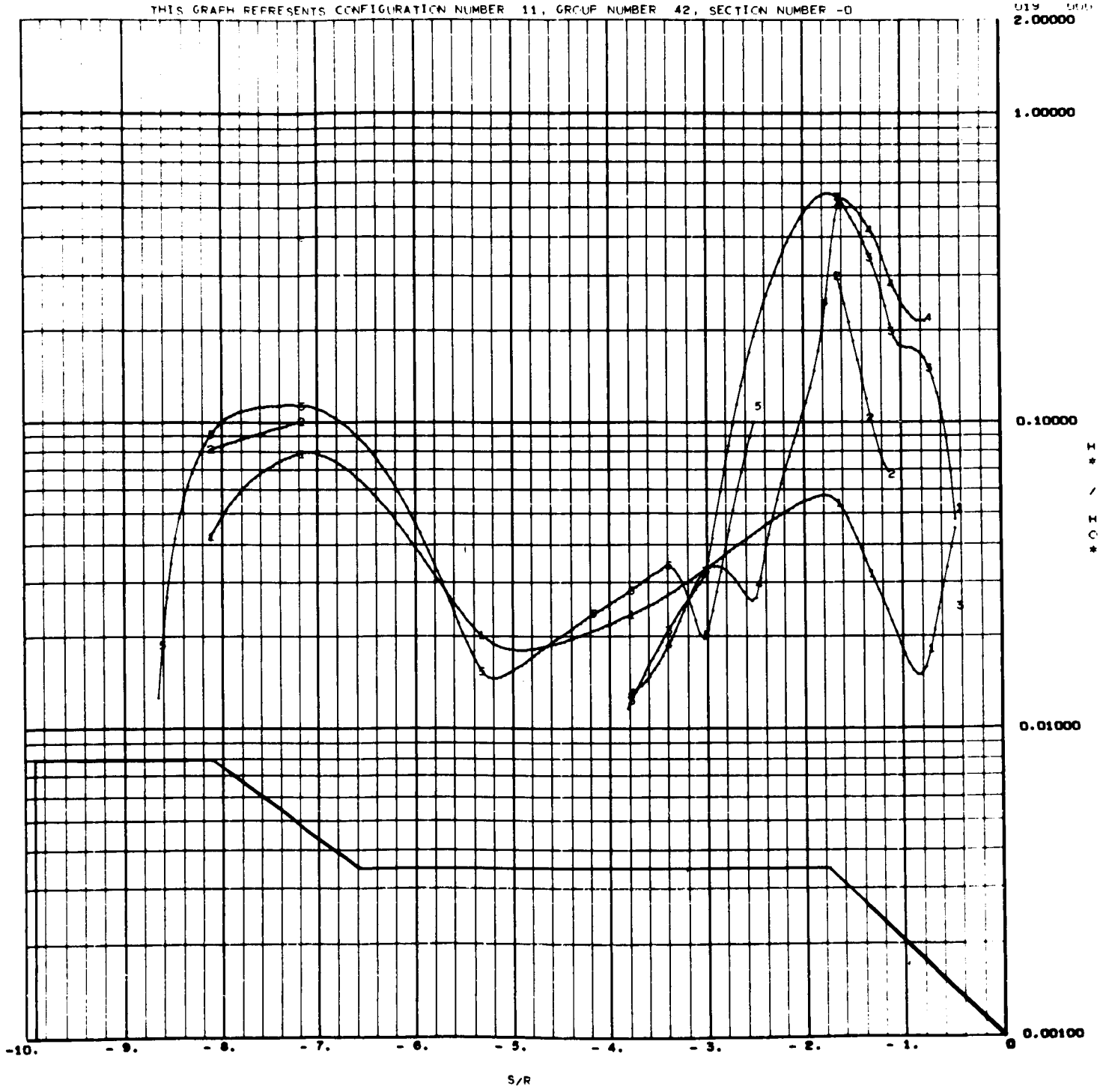
APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 42
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1714 X 10^6
H_C^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1869.90 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 42, SECTION NUMBER -0



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HEAT TRANSFER TEST

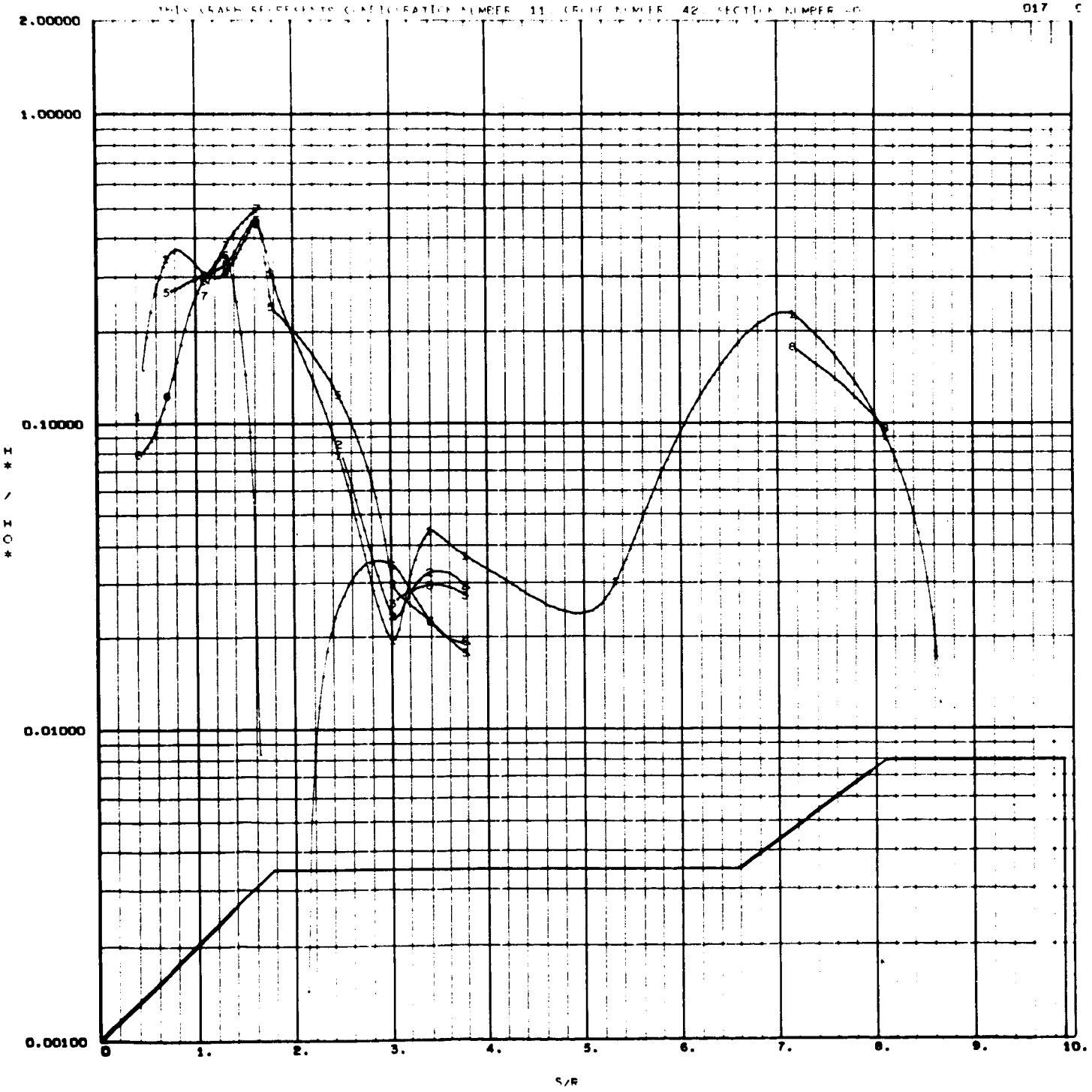
APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
CRUISE NO. 42
TOTAL PRESSURE 1660.0 PSIA
REYNOLDS NUMBER PER INCH 0.1714 X 10^6
H_c^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1869.90 DEGREES RANKINE
ANGLE OF ATTACK 5.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8

THIS CRAFT REPRESENTS CONFIGURATION NUMBER 11 CRUISE NUMBER 42 SECTION NUMBER 00 017



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HEAT TRANSFER TEST

APOLLO

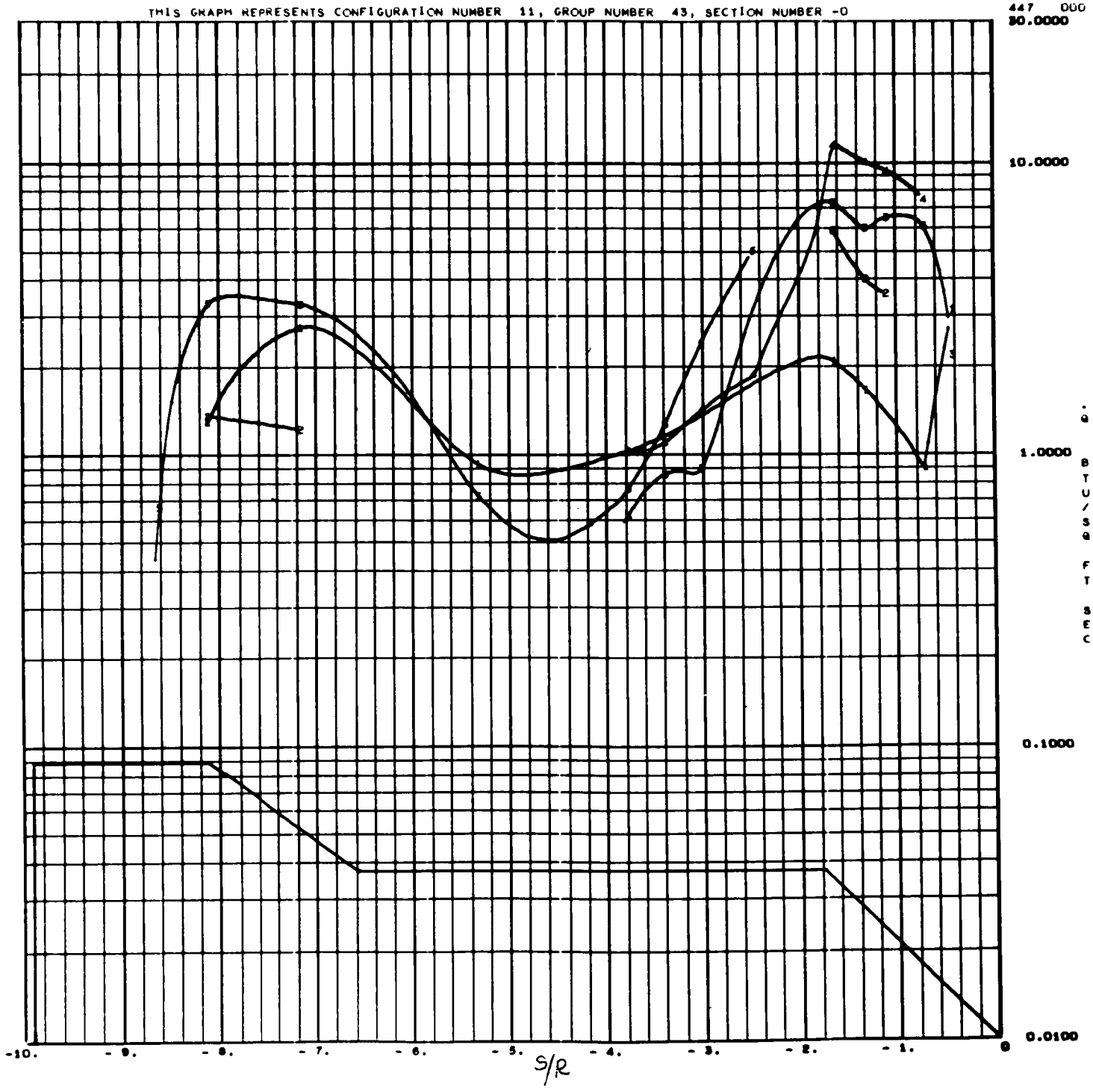
A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 43
TOTAL PRESSURE 1663.5 PSIA
REYNOLDS NUMBER PER INCH 0.1713 X 10^6
H_o^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1872.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 43, SECTION NUMBER -0

4839-07 L
447 000



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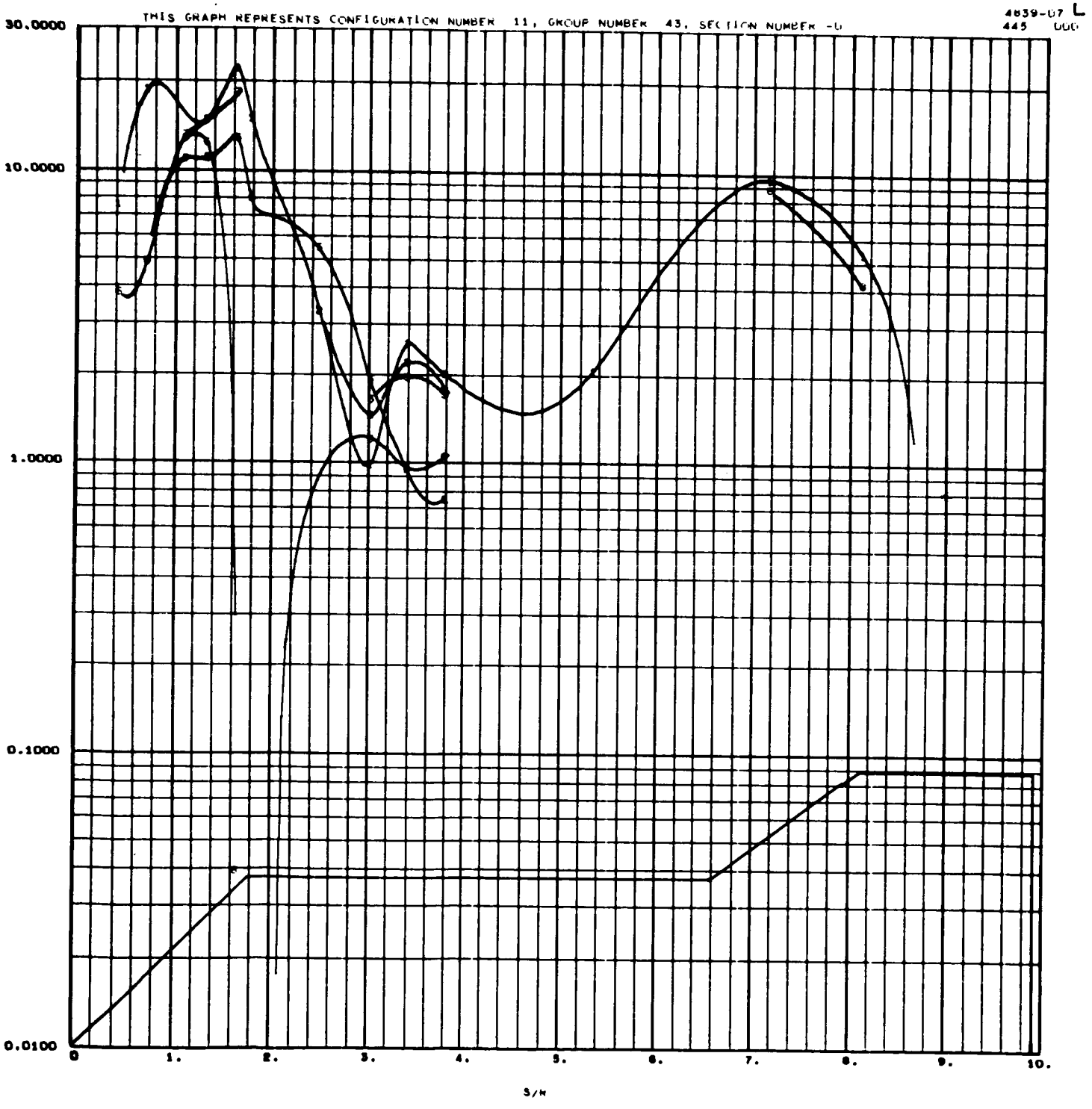
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 43
TOTAL PRESSURE 1663.5 PSIA
REYNOLDS NUMBER PER INCH 0.1713 X 10^6
M_∞* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1872.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

A PHI	SYMBOL	X PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



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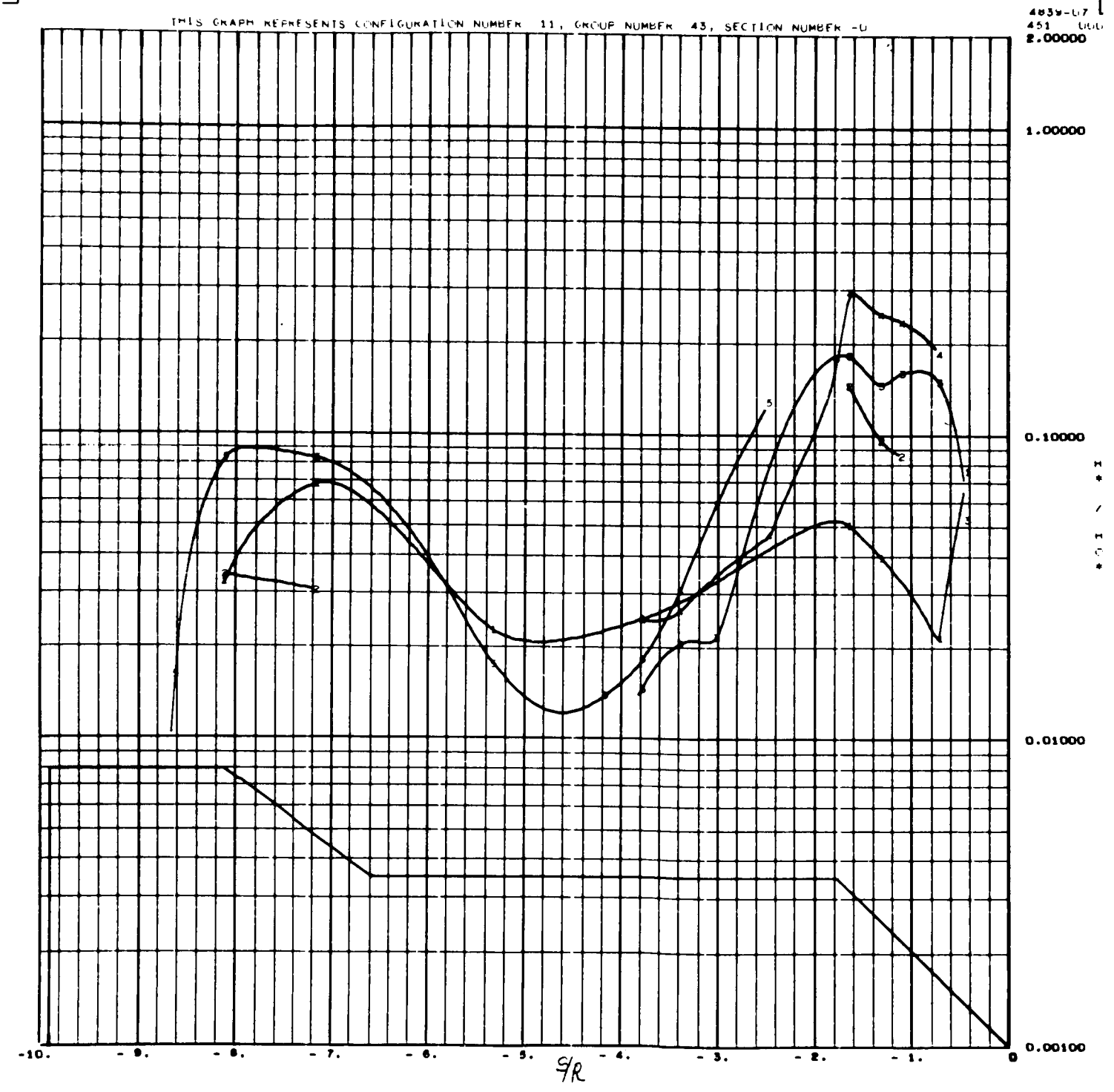
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 43
TOTAL PRESSURE 1663.5 PSIA
REYNOLDS NUMBER PER INCH 0.1713 x 10^6
μ_0^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1872.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



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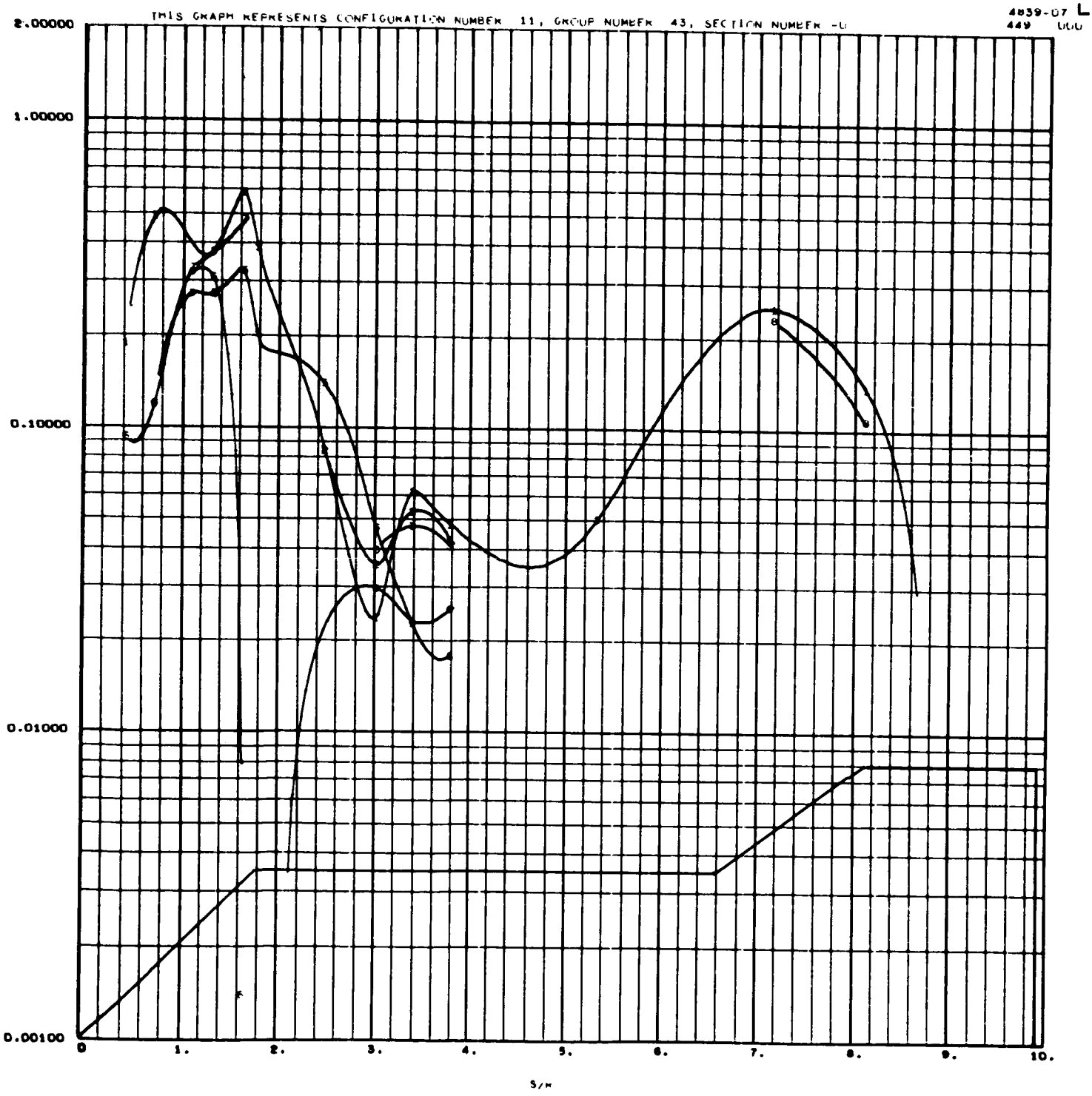
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 43
TOTAL PRESSURE 1663.5 PSIA
REYNOLDS NUMBER PER INCH 0.1713 X 10^6
μ_c^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1872.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

[redacted]

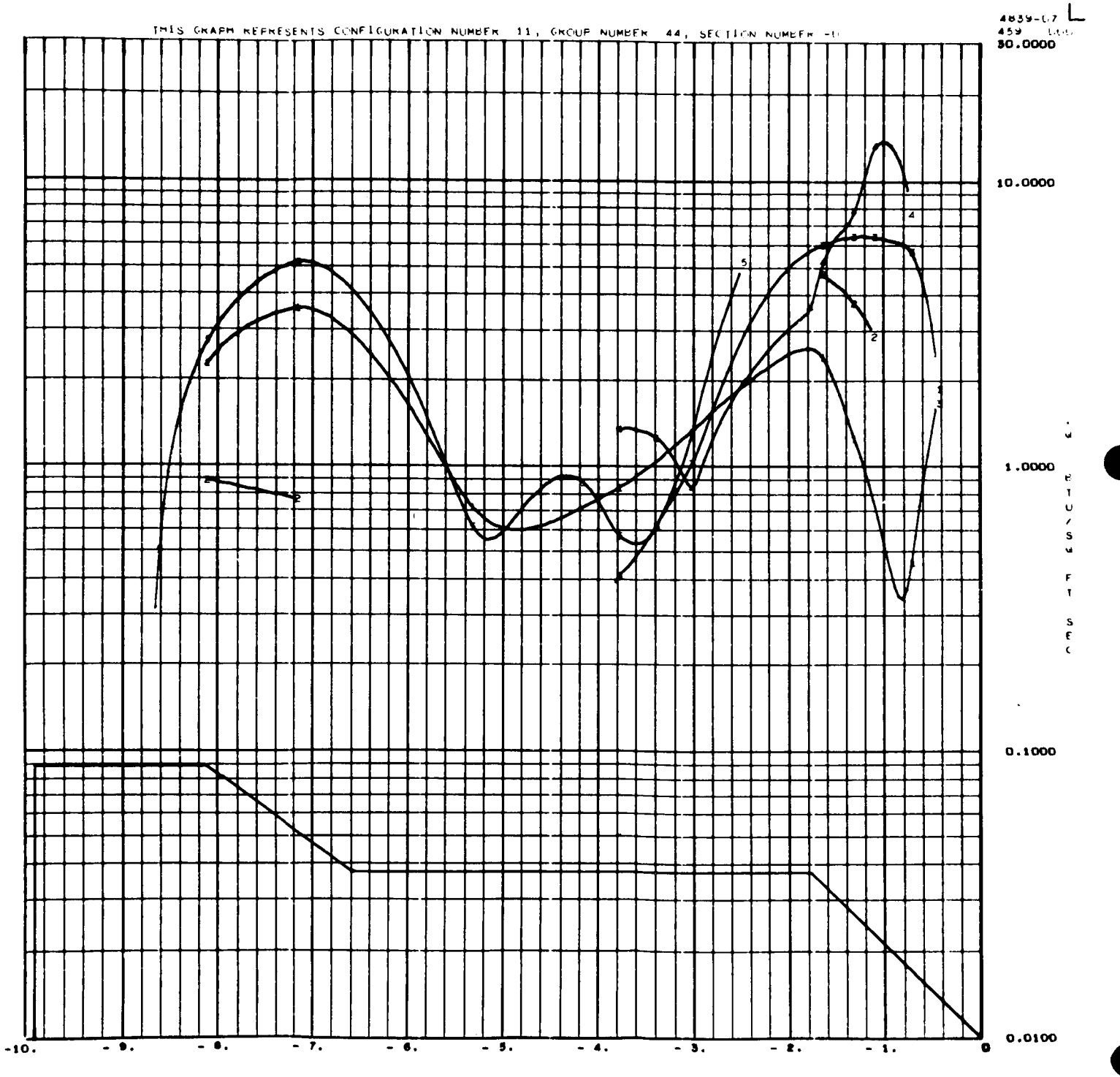
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 44
TOTAL PRESSURE 1660.8 PSIA
REYNOLDS NUMBER PER INCH 0.1708 X 10^6
H_o* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1873.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2



[redacted]

[redacted]

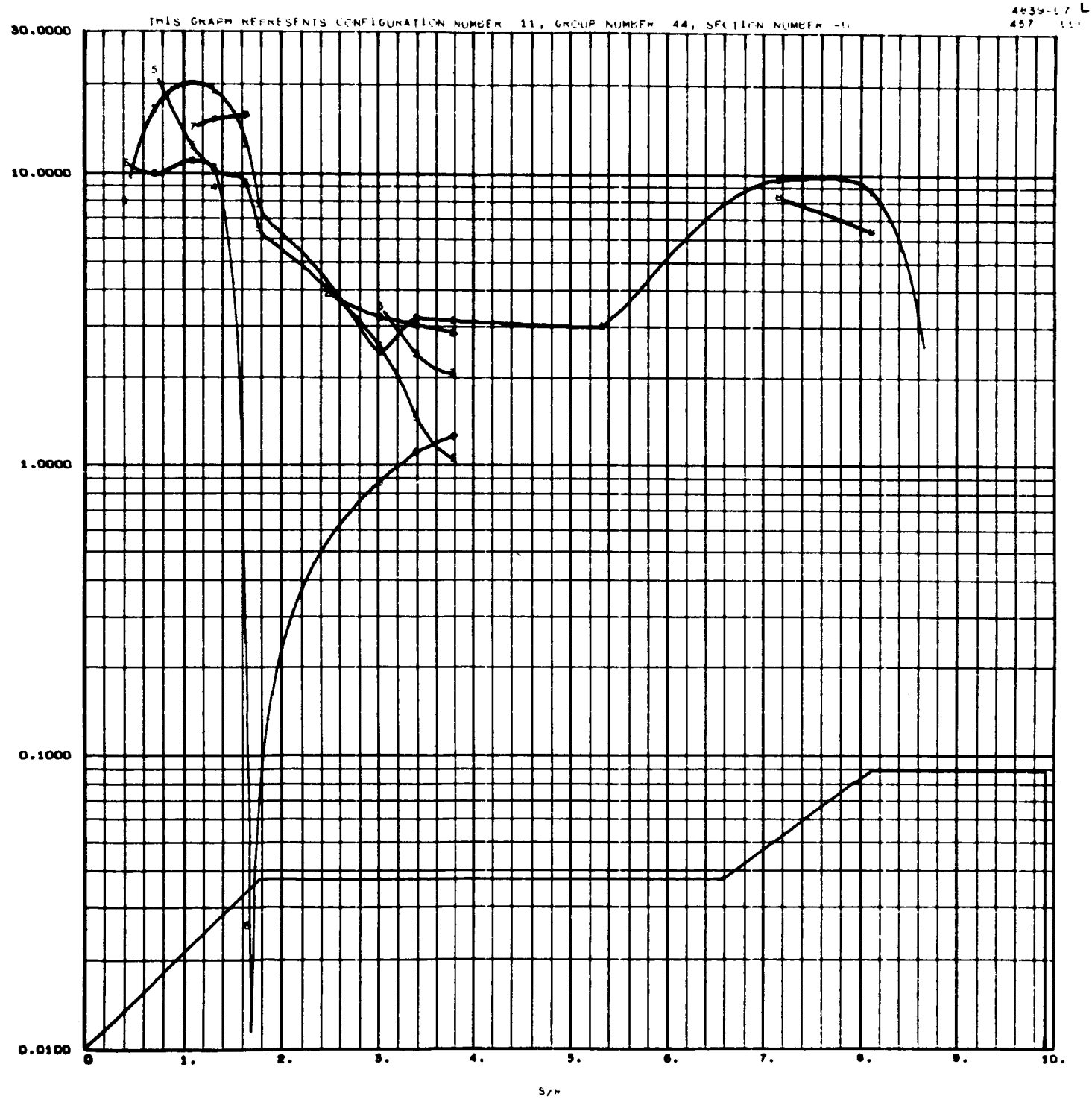
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 44
TOTAL PRESSURE 1660.8 PSIA
REYNOLDS NUMBER PER INCH 0.1708 x 10^6
H_c^* 0.11512 LB/FT x SEC
TOTAL TEMPERATURE 1873.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 44
TOTAL PRESSURE 1660.8 PSIA
REYNOLDS NUMBER PER INCH 0.1708 X 10^6
H_O^* 0.11512 LB/FT X SEC
TOTAL TEMPERATURE 1873.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL
180.0	1
225.0	2
240.0	3
255.0	4
270.0	5
225.0	2

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 11, GROUP NUMBER 44, SECTION NUMBER -0

4839-07 L
463 000

2.00000
1.00000
0.10000
0.01000
0.00100

H^* / H_O^*

-10. -9. -8. -7. -6. -5. -4. -3. -2. -1. 0

S/R

[redacted]

[redacted]

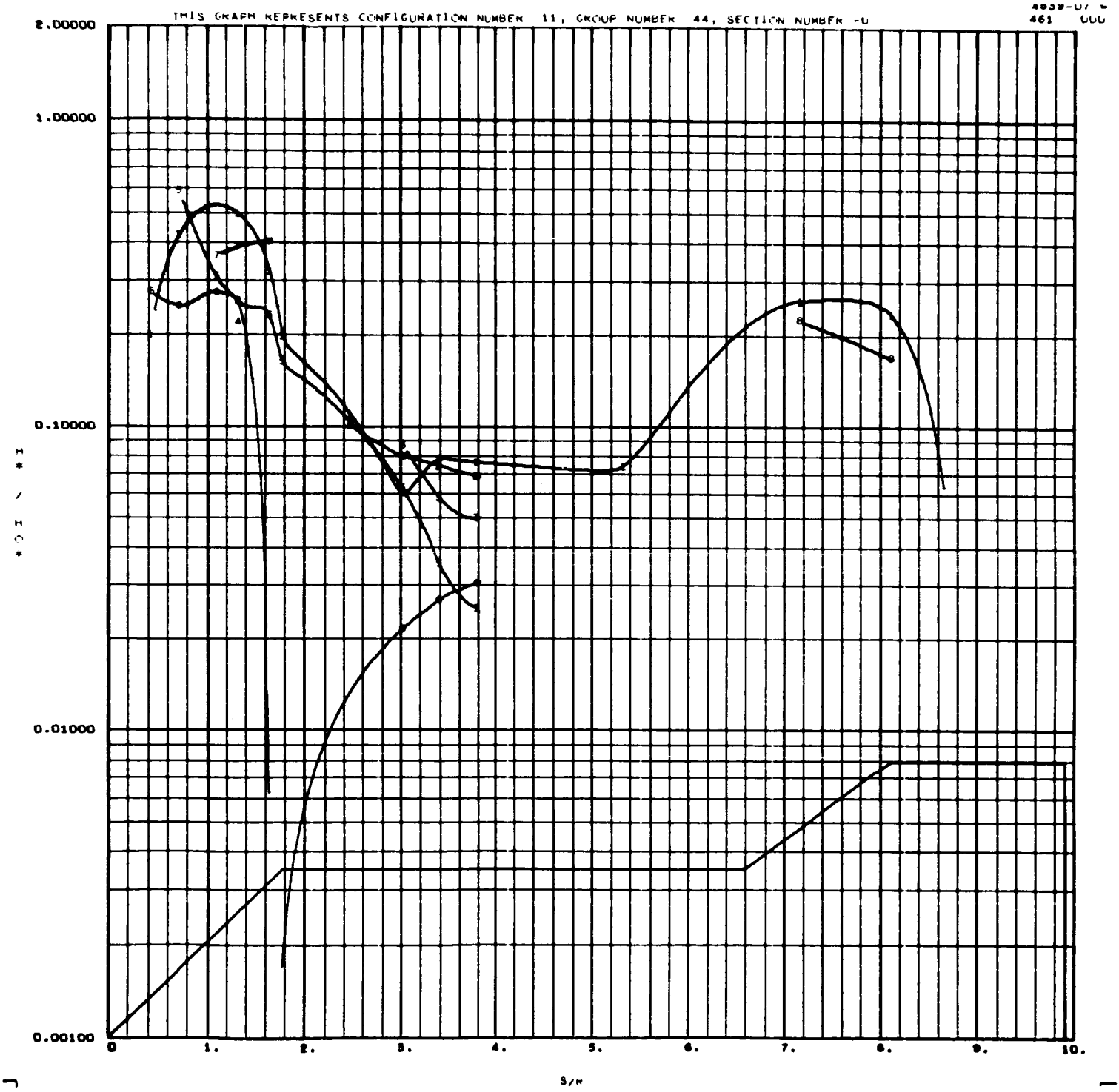
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 11 MACH NO. 10.18
GROUP NO. 44
TOTAL PRESSURE 1660.8 PSIA
REYNOLDS NUMBER PER INCH 0.1708 x 10^6
H_o * 0.11512 LB/FT^2 X SEC
TOTAL TEMPERATURE 1873.70 DEGREES RANKINE
ANGLE OF ATTACK 15.0 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	335.0	8



[redacted]

CONFIDENTIAL

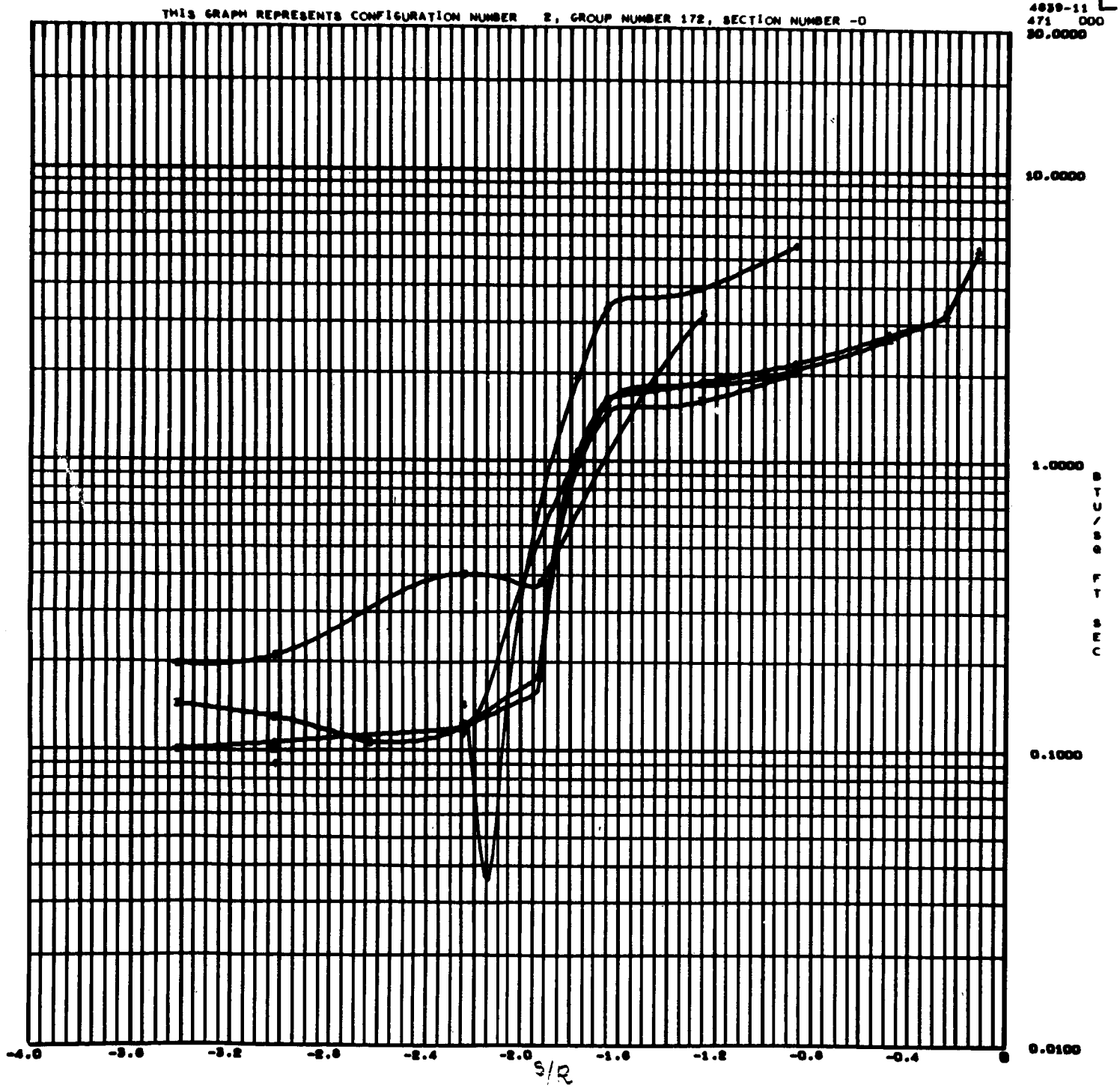
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 172
TOTAL PRESSURE 212.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1651.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



CONFIDENTIAL

[redacted]

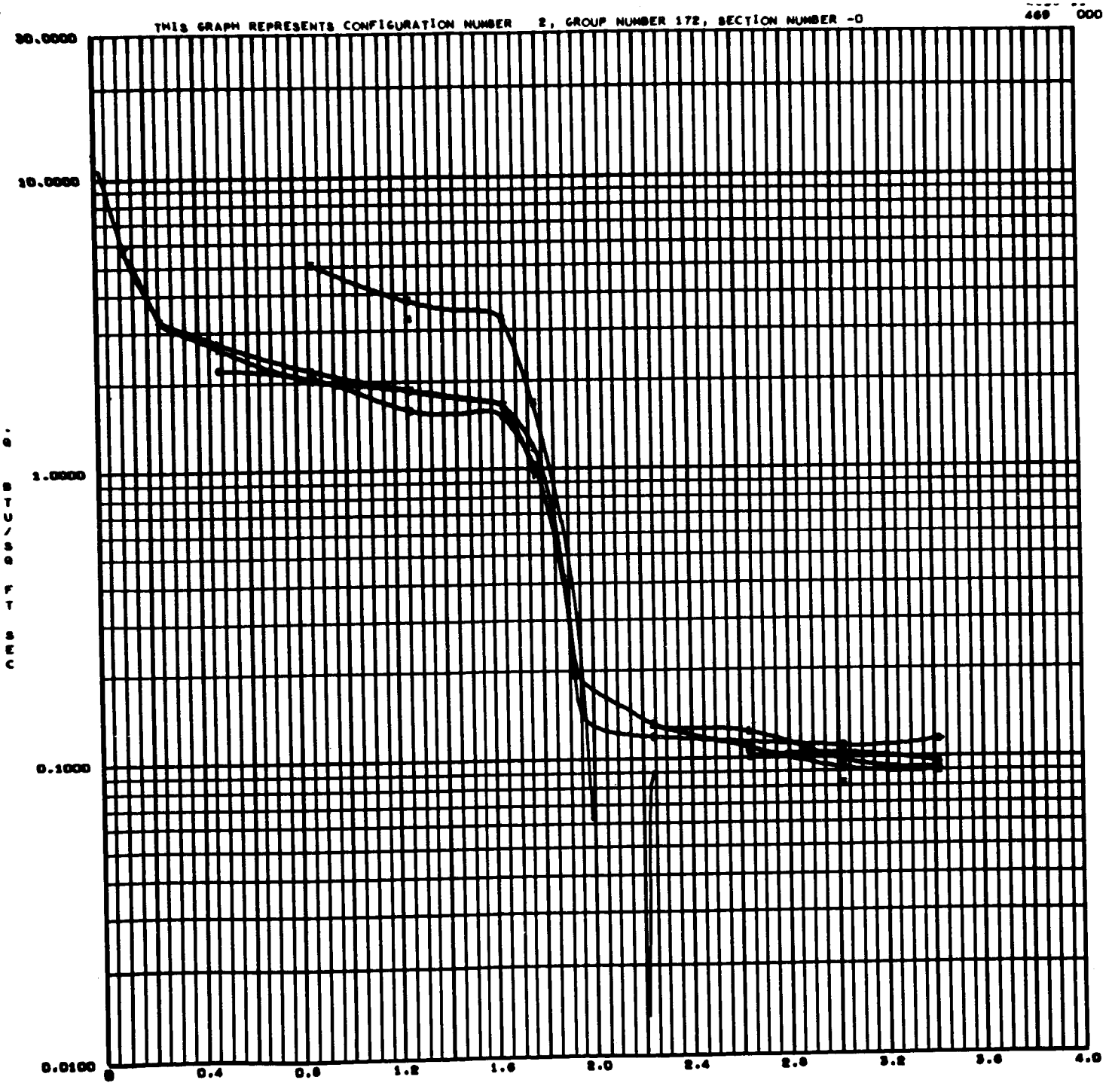
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 172
TOTAL PRESSURE 212.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1651.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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CONFIDENTIAL

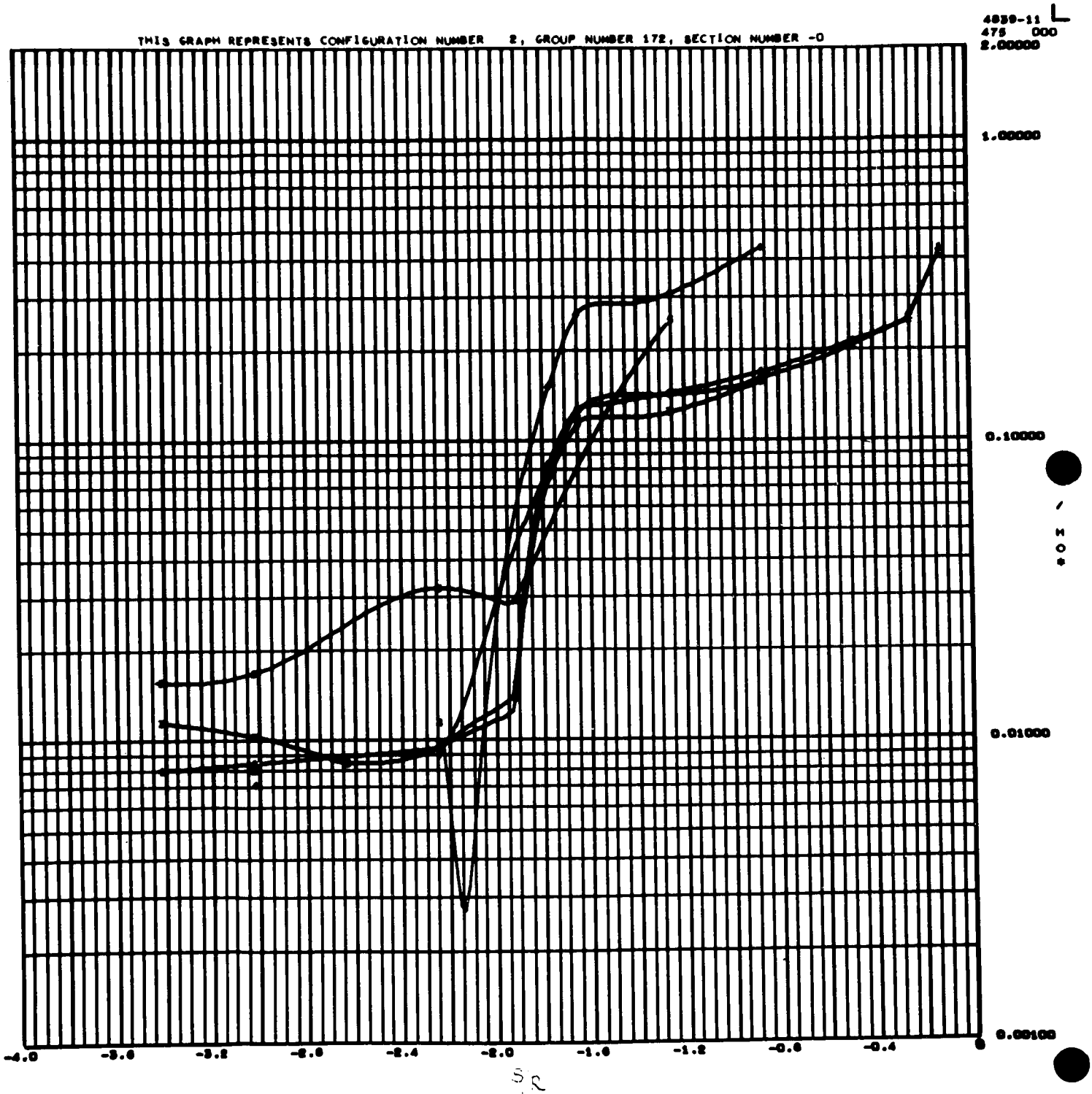
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 172
TOTAL PRESSURE 212.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
M_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1651.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

HEAT TRANSFER TEST

APOLLO

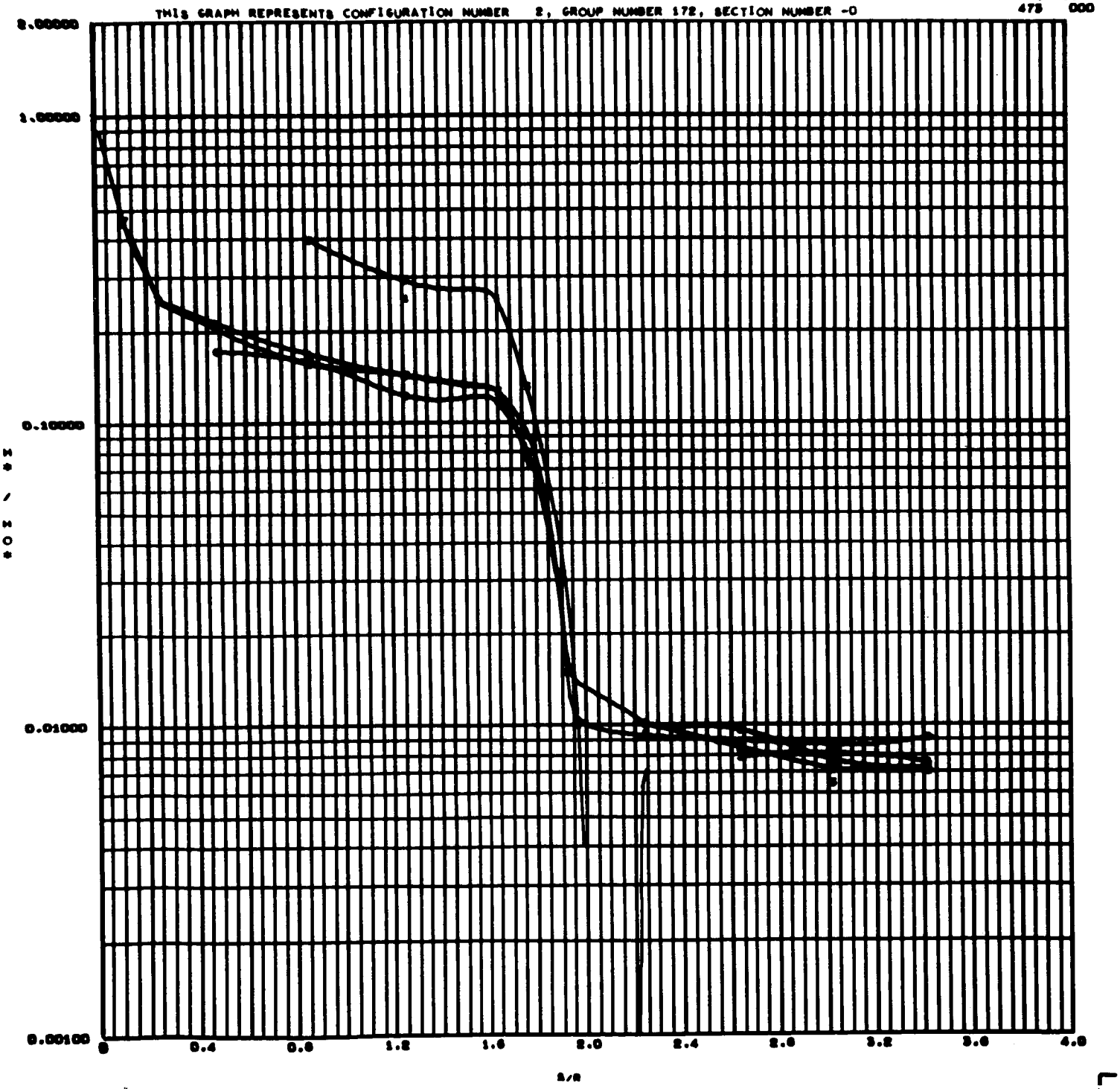
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 172
TOTAL PRESSURE 212.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1651.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 172, SECTION NUMBER -0

475 000



[redacted]

CONFIDENTIAL

HEAT TRANSFER TEST

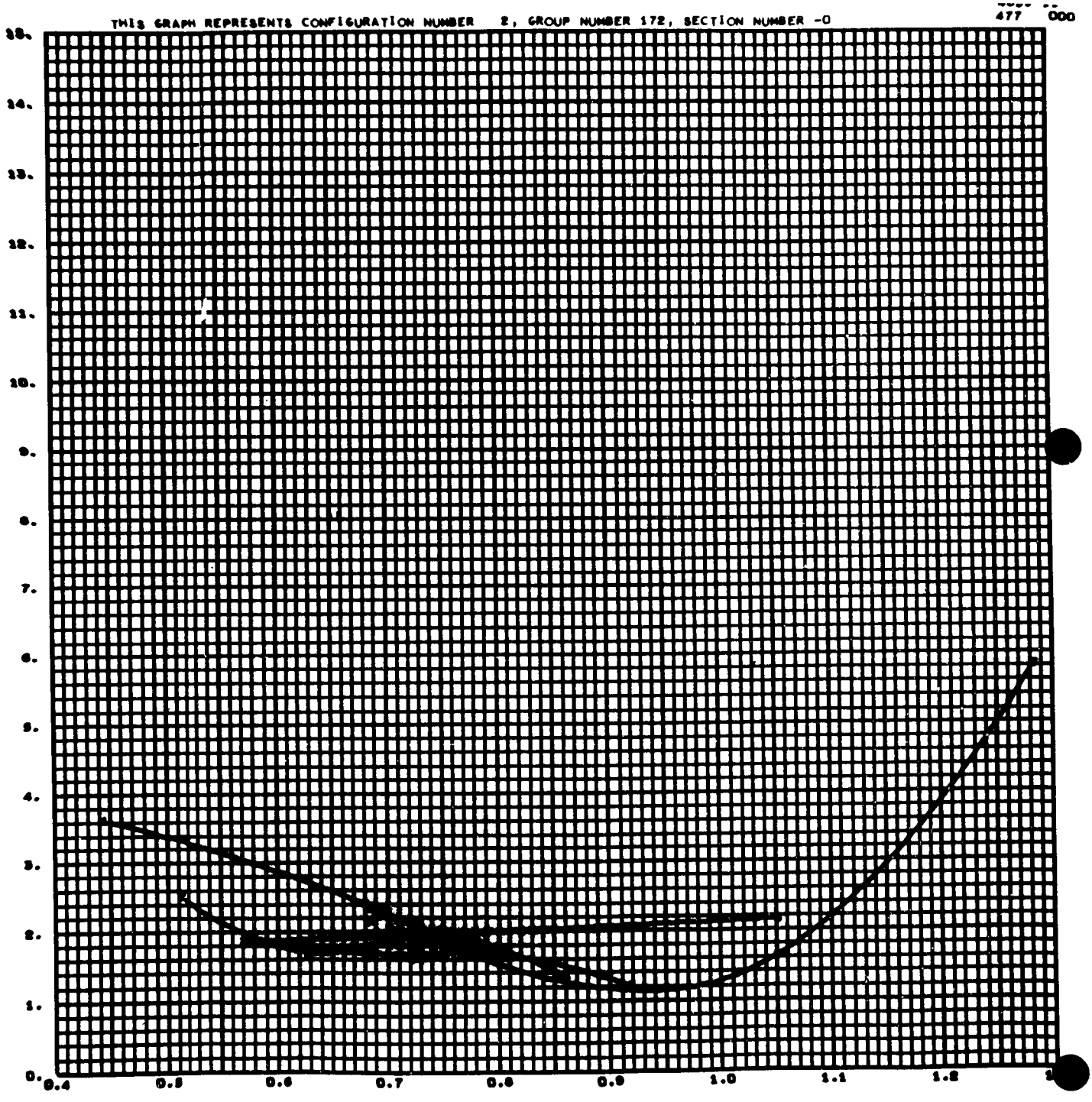
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 172
TOTAL PRESSURE 212.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1651.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

WINDWARD SNAKE DATA



CONFIDENTIAL

~~CONFIDENTIAL~~

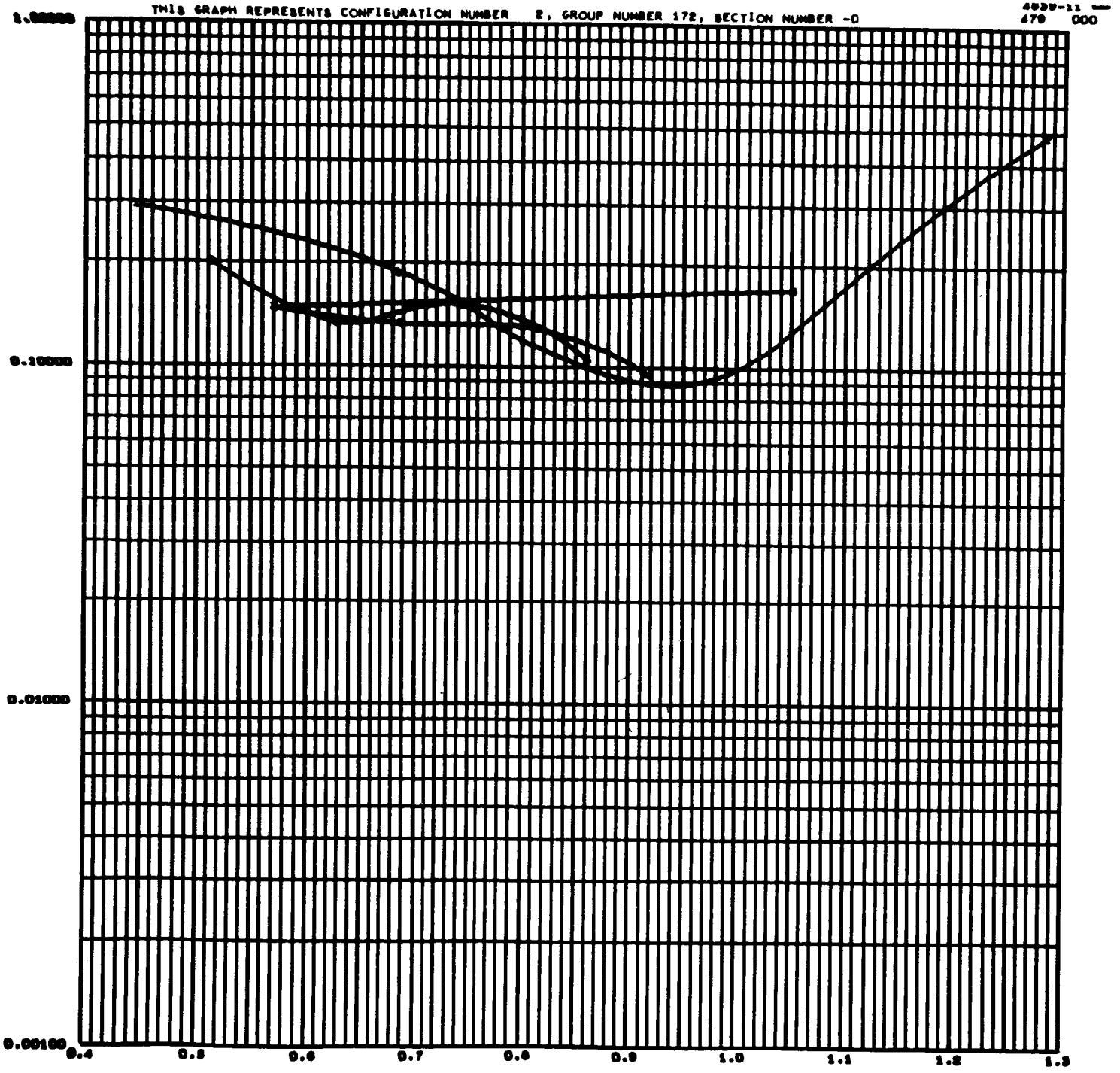
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 172
TOTAL PRESSURE 212.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1651.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 173
TOTAL PRESSURE 217.3 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1636.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

S/C

[redacted]

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HEAT TRANSFER TEST

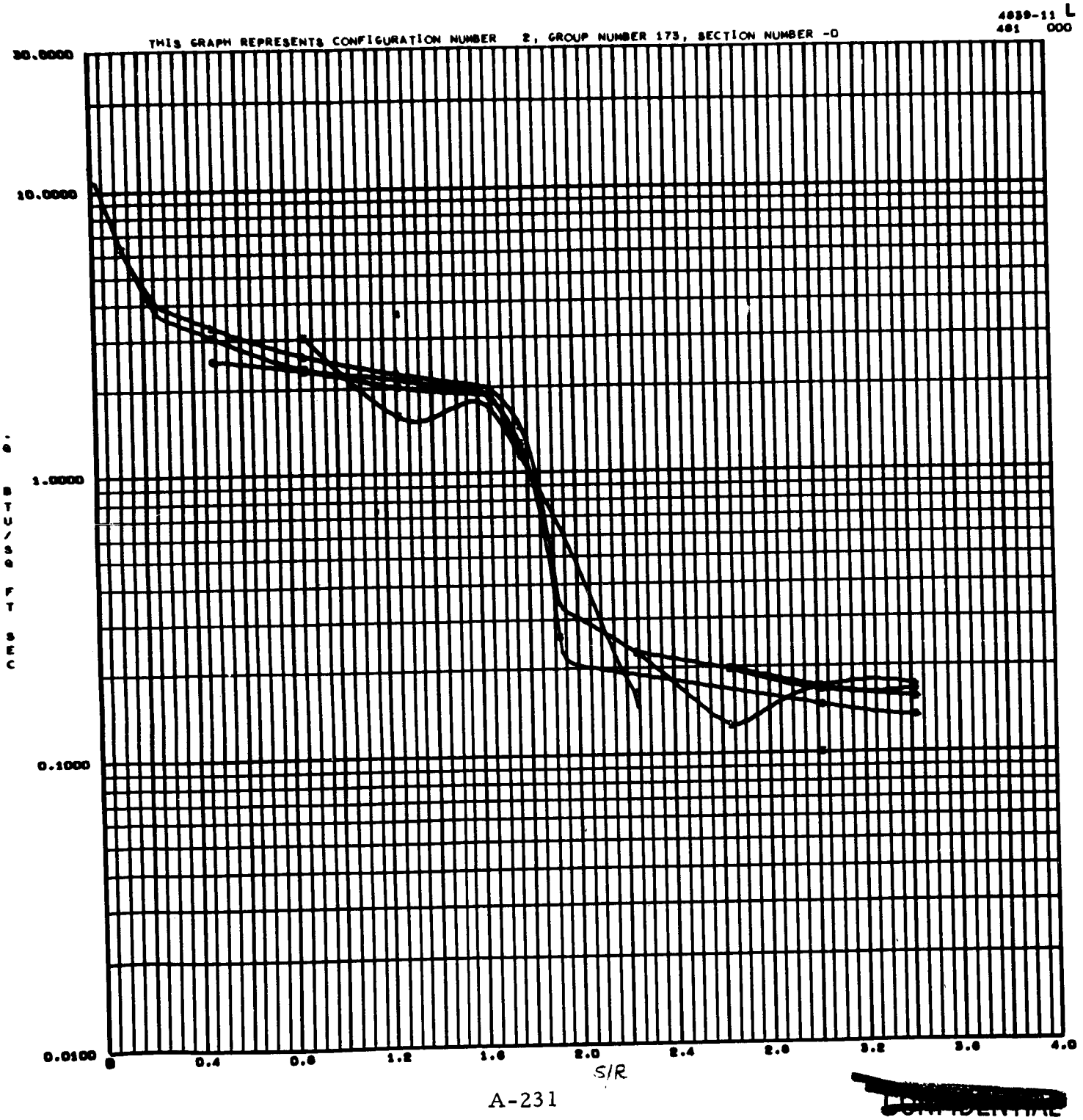
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 173
TOTAL PRESSURE 217.3 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1636.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11 L
481 000



~~CONFIDENTIAL~~

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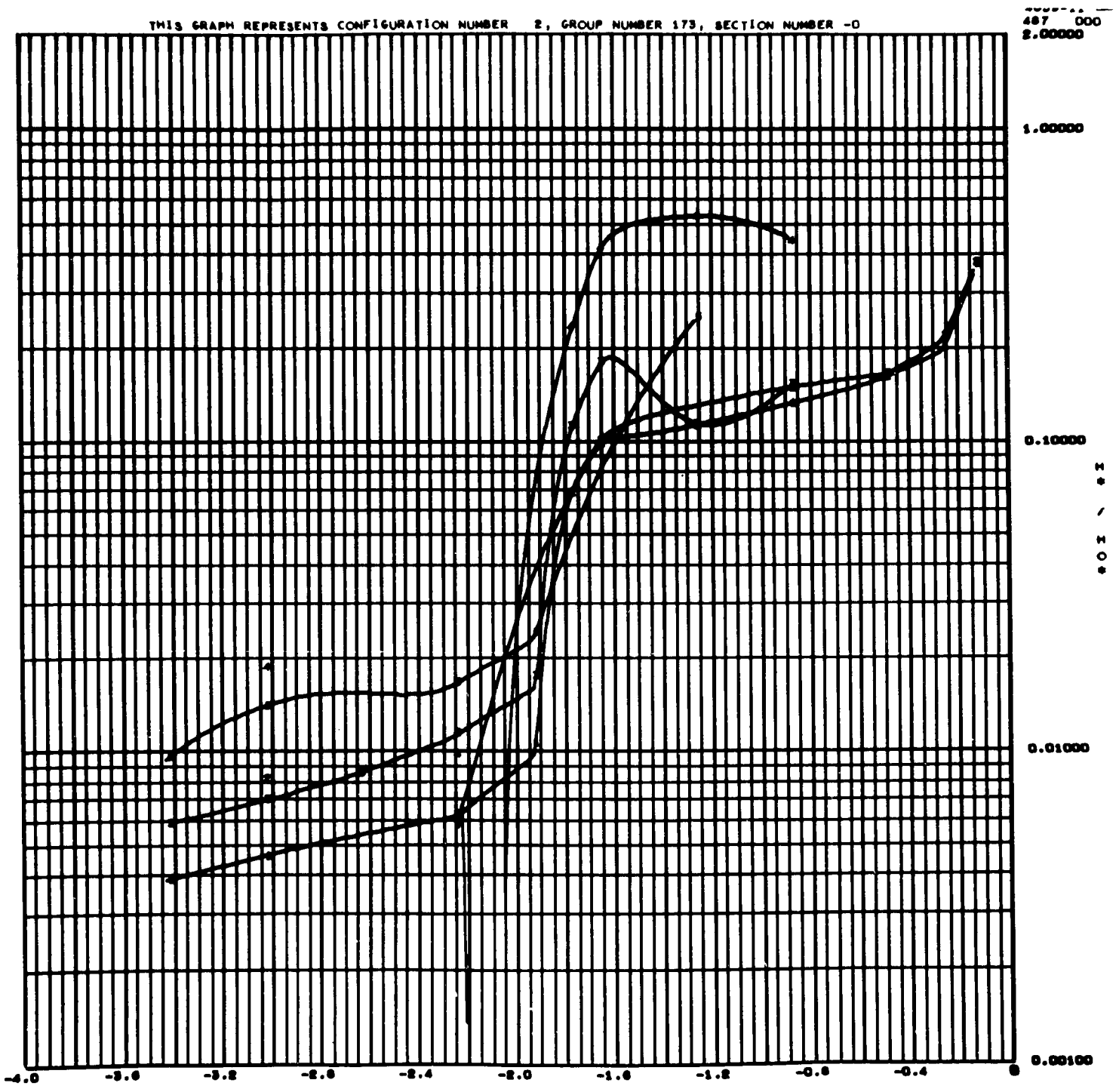
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 173
TOTAL PRESSURE 217.3 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1636.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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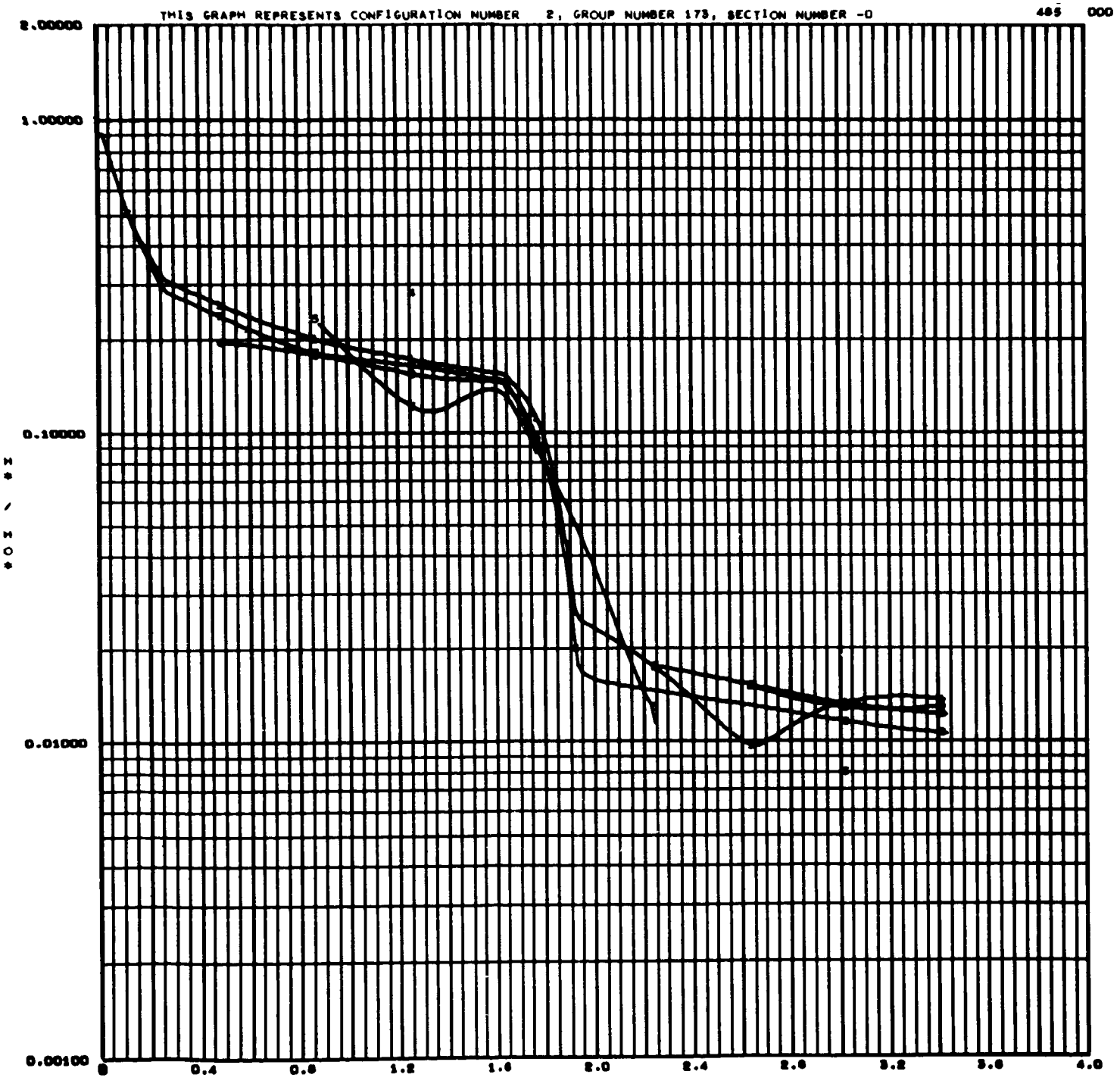
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 173
TOTAL PRESSURE 217.3 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1636.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

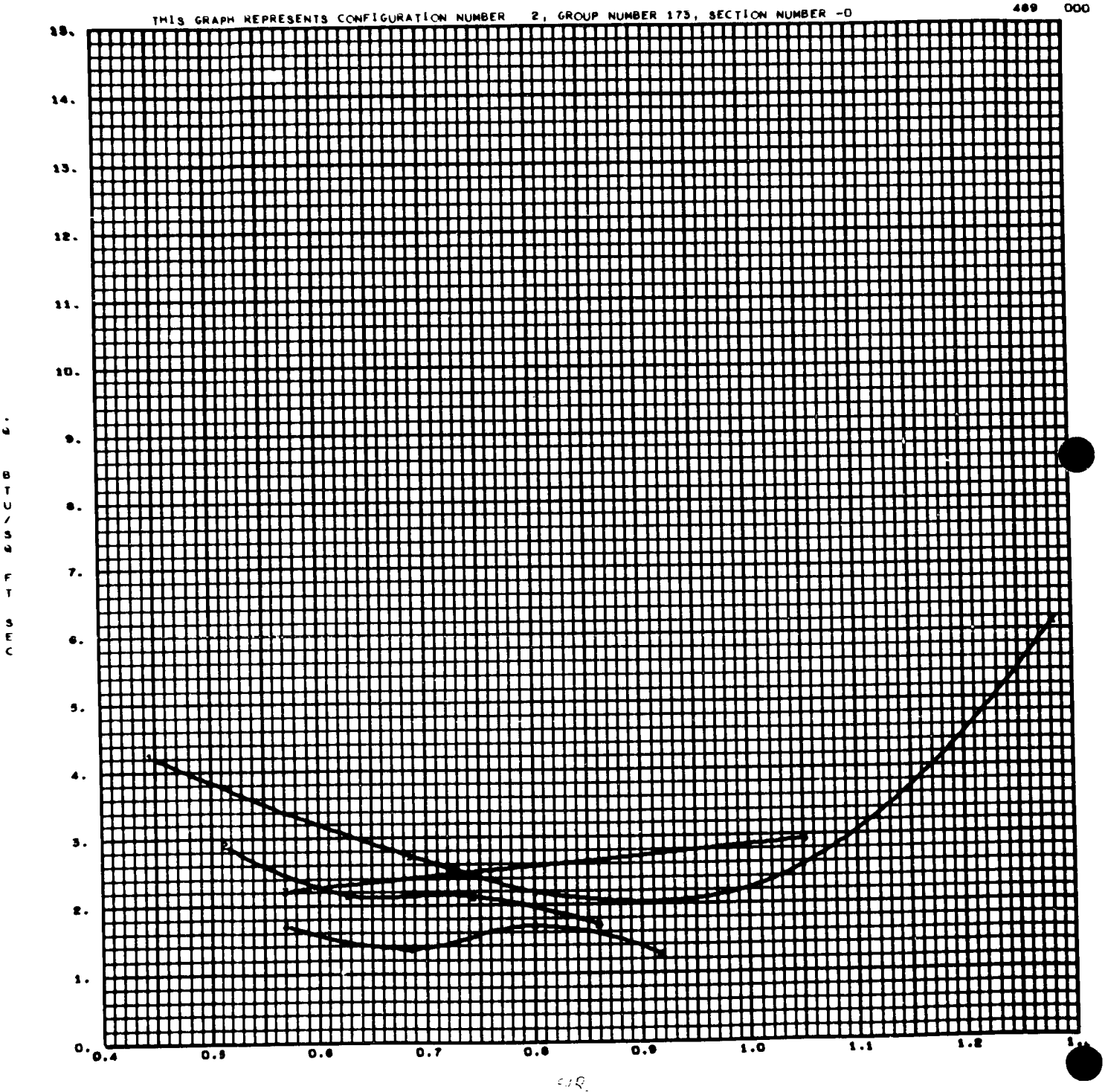
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 173
TOTAL PRESSURE 217.3 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1636.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4039-11
489 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 173, SECTION NUMBER -0



CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

APOLLO

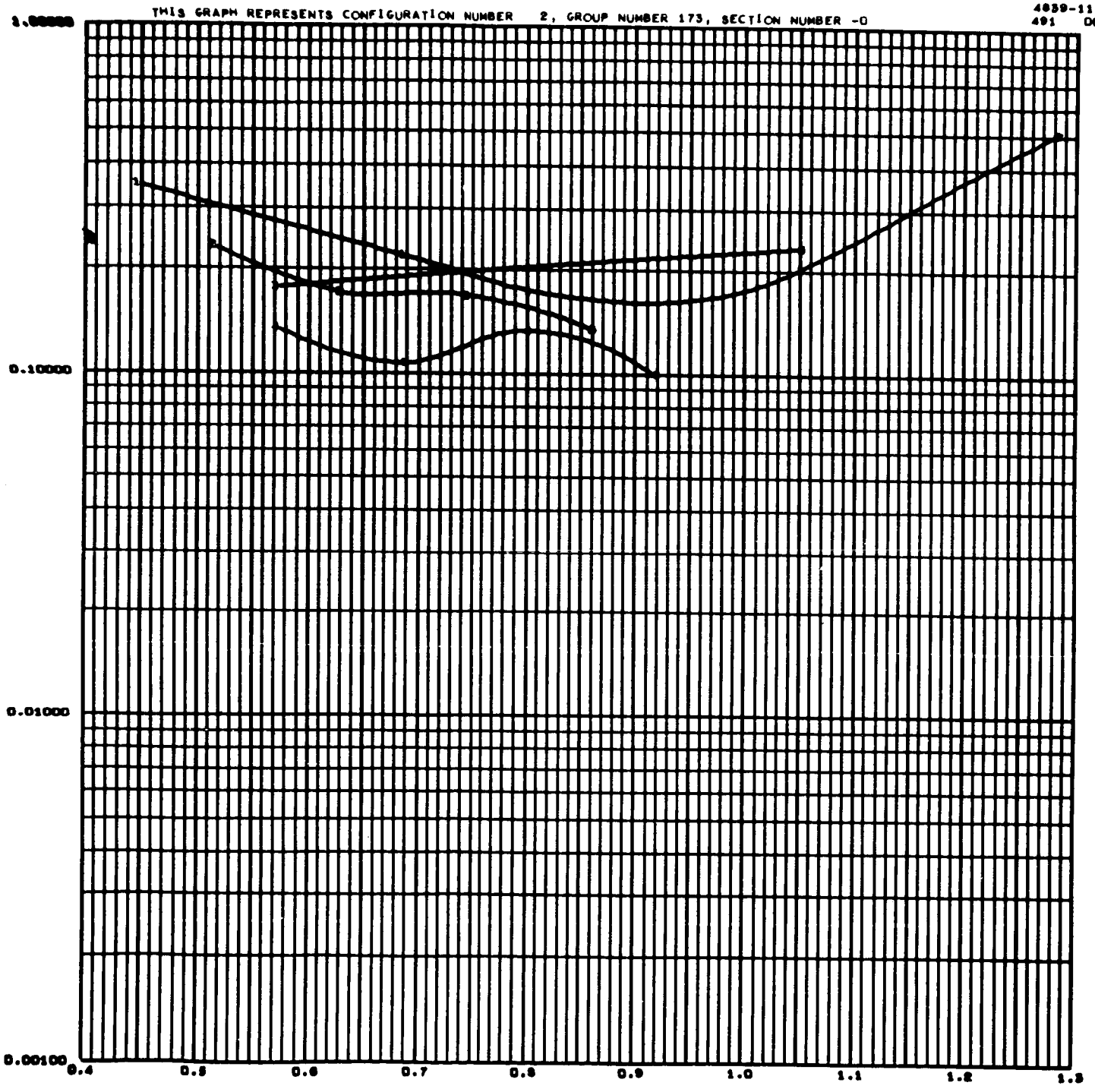
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 173
TOTAL PRESSURE 217.3 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1636.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 173, SECTION NUMBER -0

4839-11 L
491 000



S/R

[redacted]

~~CONFIDENTIAL~~

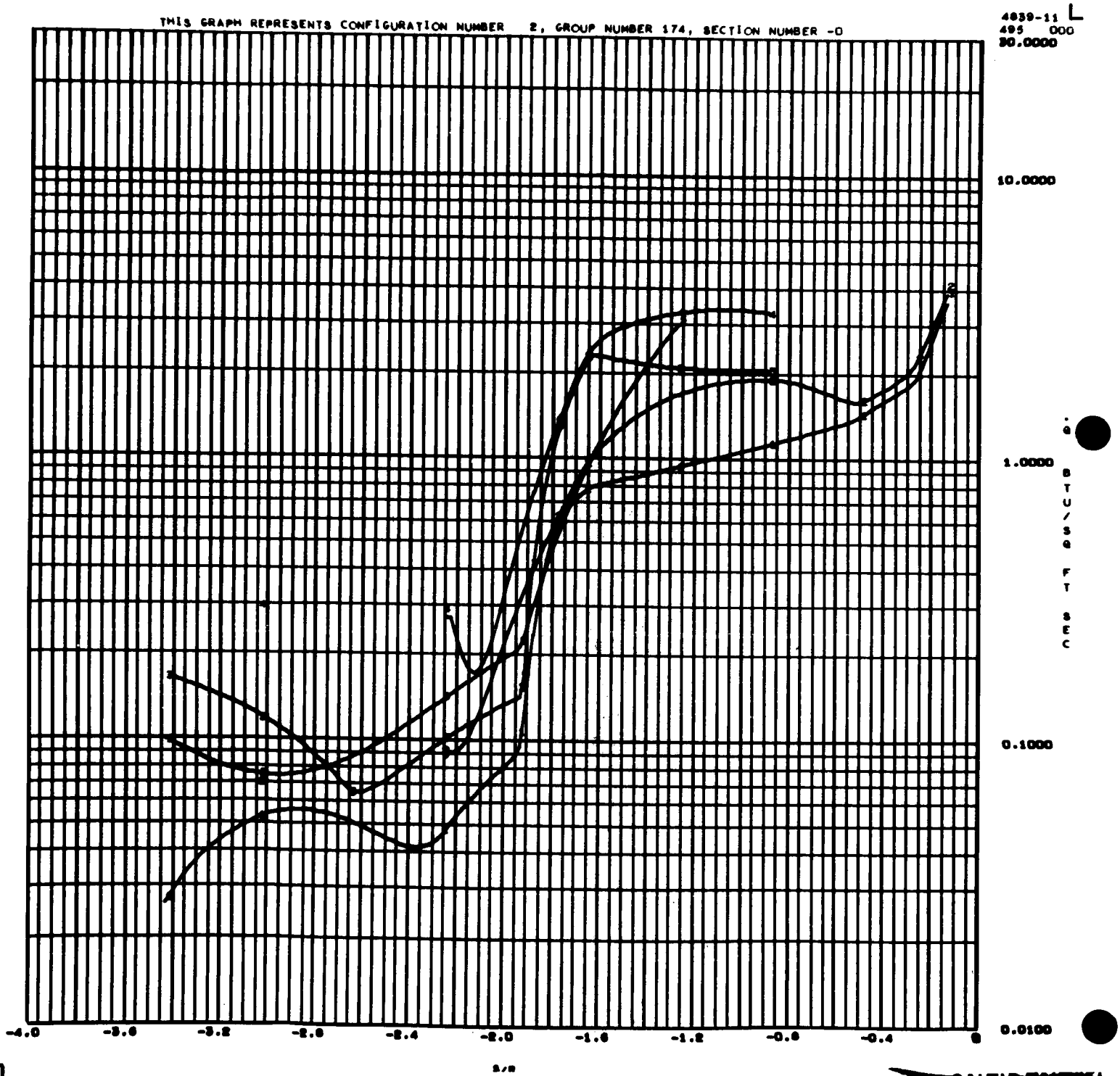
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 174
TOTAL PRESSURE 220.0 PSIA
REYNOLDS NUMBER PER INCH 0.0293 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1630.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

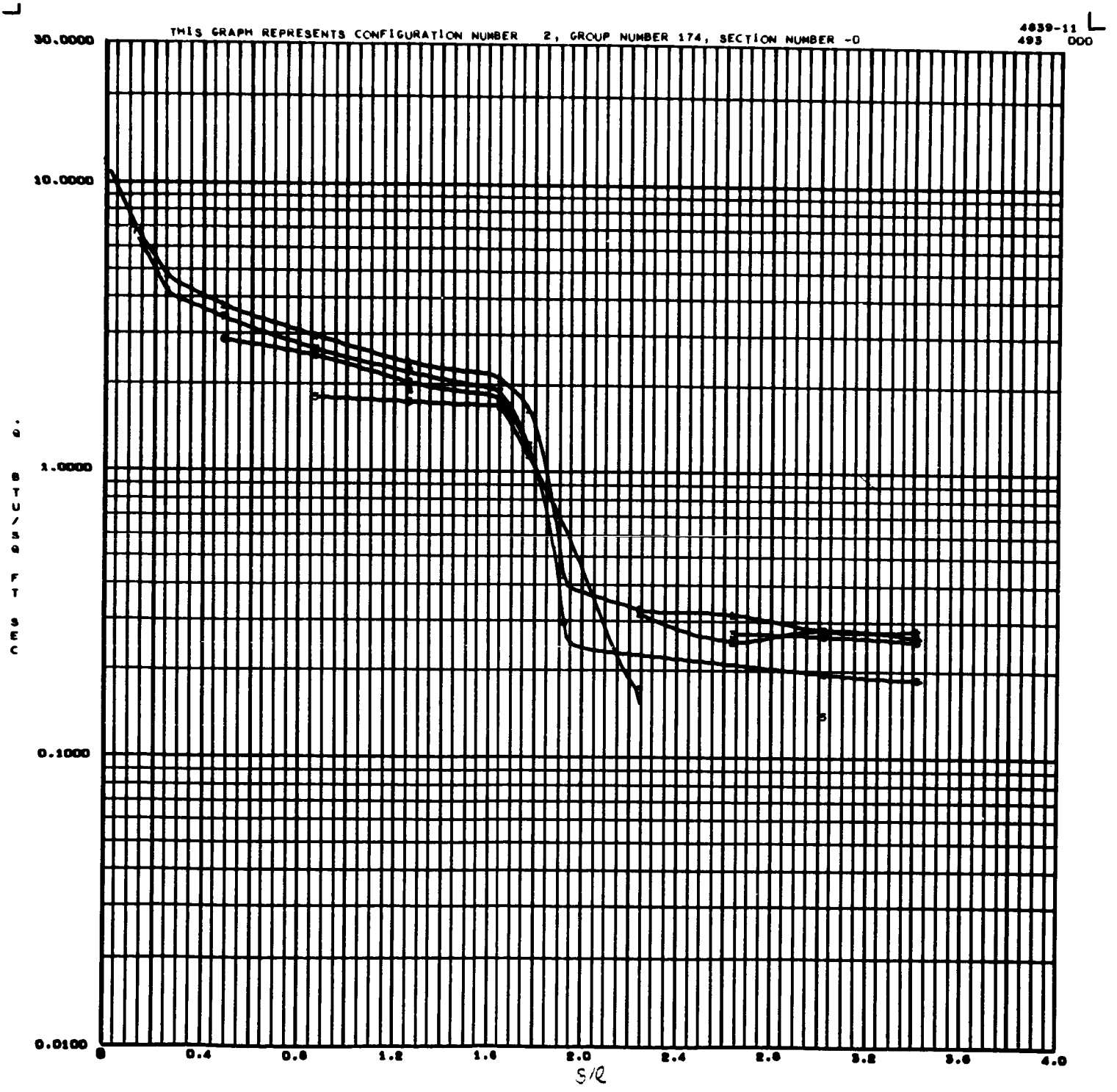
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 174
TOTAL PRESSURE 220.0 PSIA
REYNOLDS NUMBER PER INCH 0.0293 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1630.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



CONFIDENTIAL

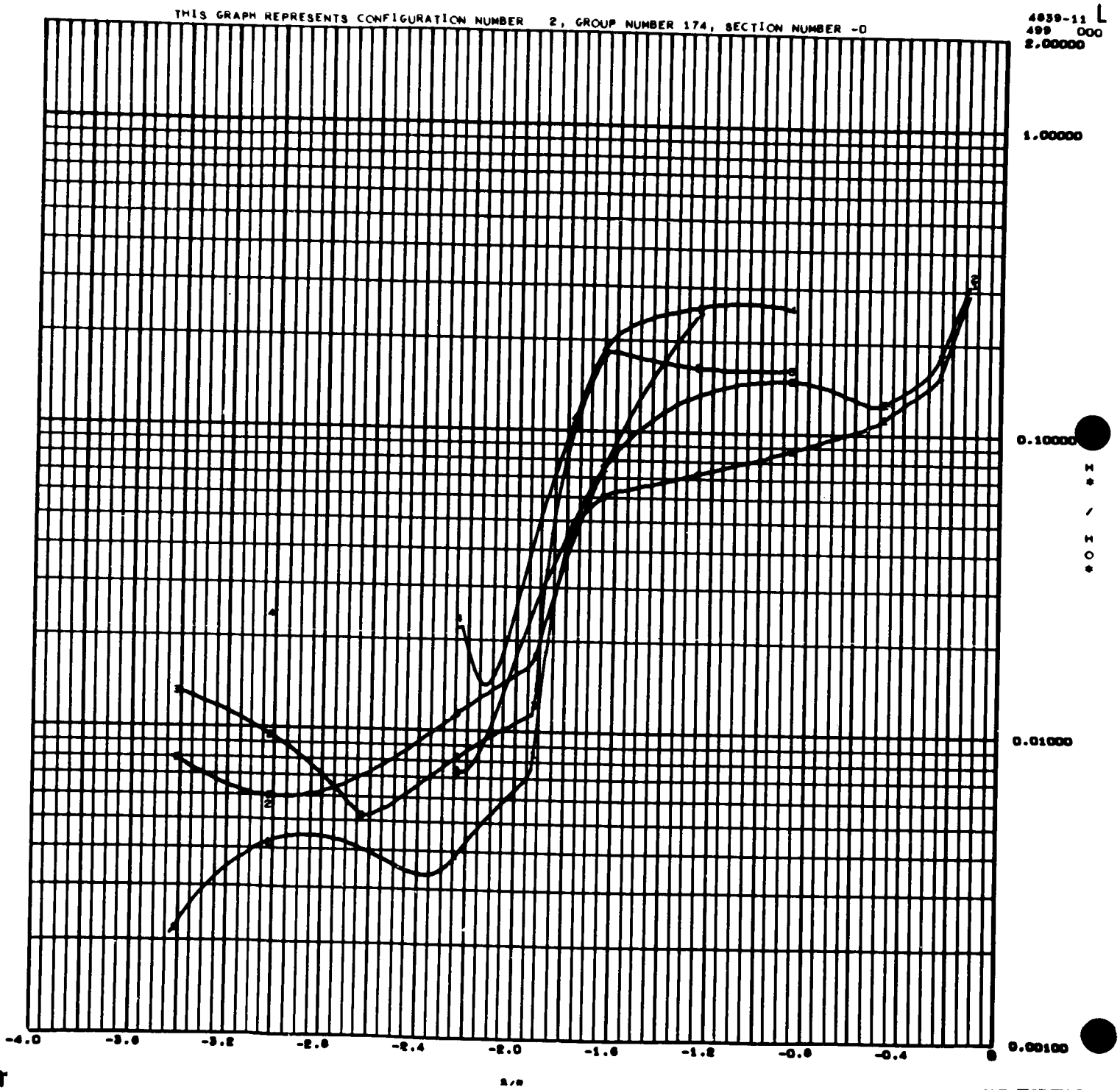
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 174
TOTAL PRESSURE 220.0 PSIA
REYNOLDS NUMBER PER INCH 0.0293 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1630.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



CONFIDENTIAL

CONFIDENTIAL

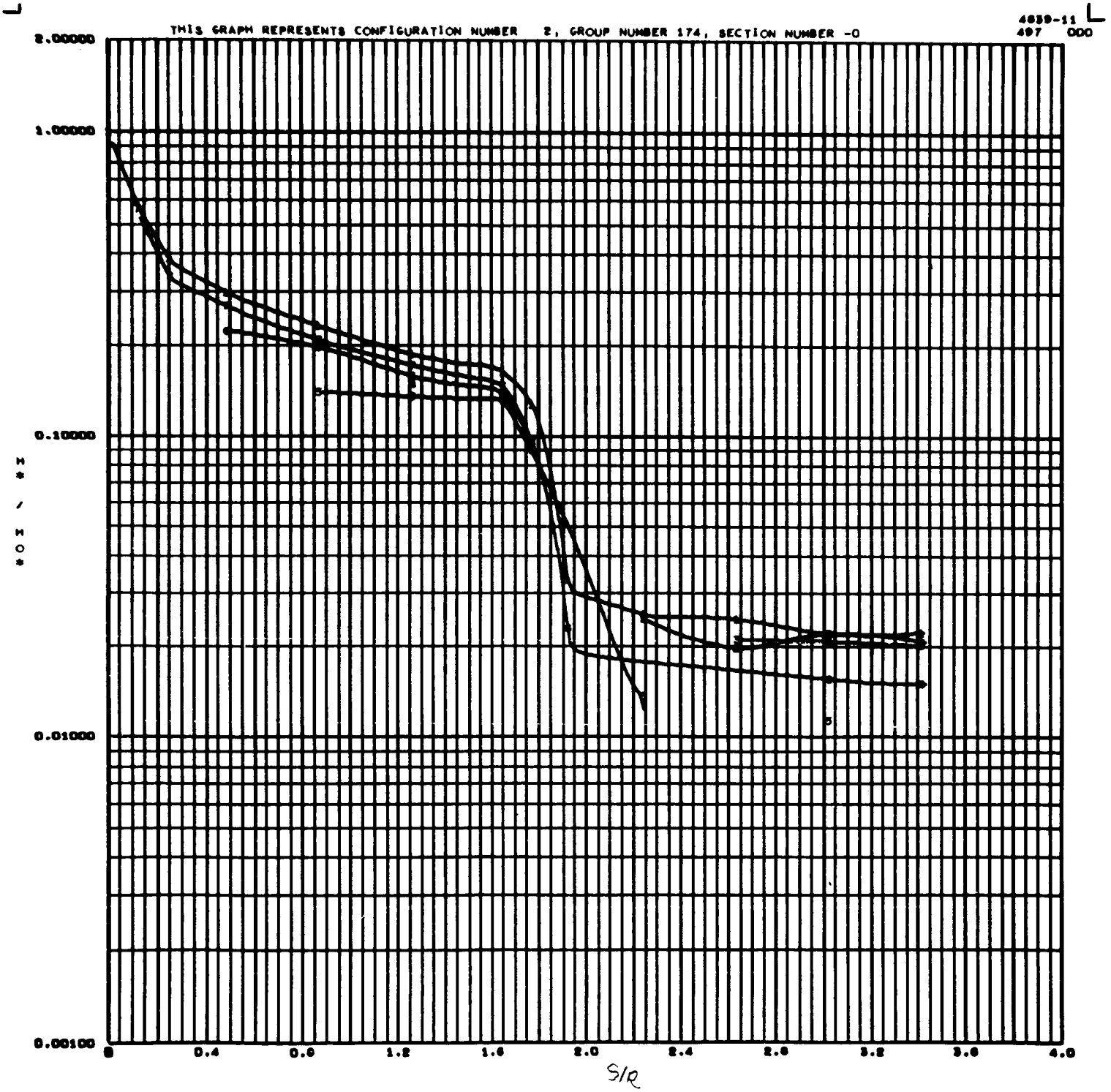
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 174
TOTAL PRESSURE 220.0 PSIA
REYNOLDS NUMBER PER INCH 0.0293 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1630.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



CONFIDENTIAL

CONFIDENTIAL

HEAT TRANSFER TEST

APOLLO

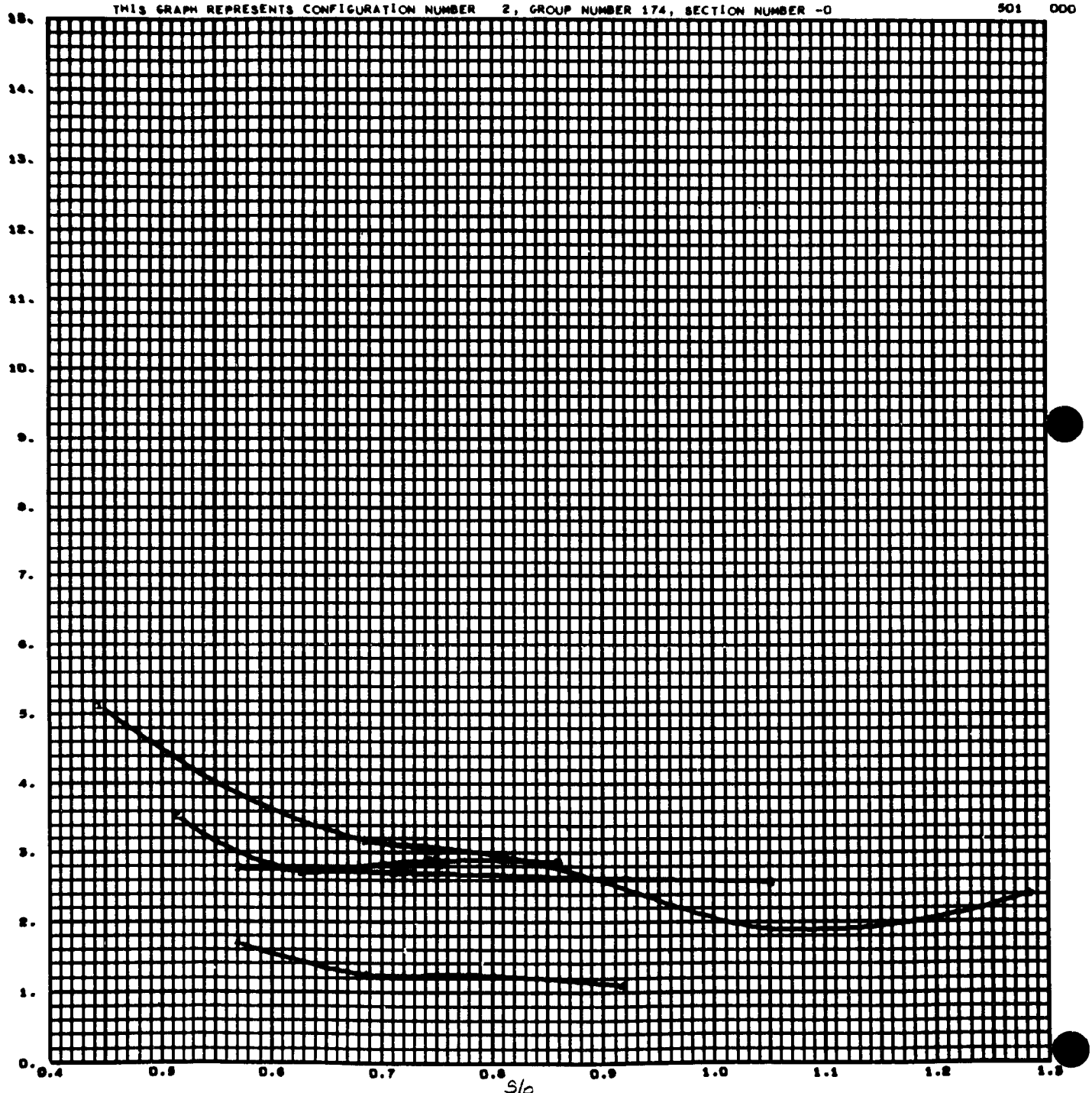
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 174
TOTAL PRESSURE 220.0 PSIA
REYNOLDS NUMBER PER INCH 0.0293 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1630.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-11 L
501 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 174, SECTION NUMBER -0



$\dot{q}$ BTU/SQ FT SEC

S/R

CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

APOLLO

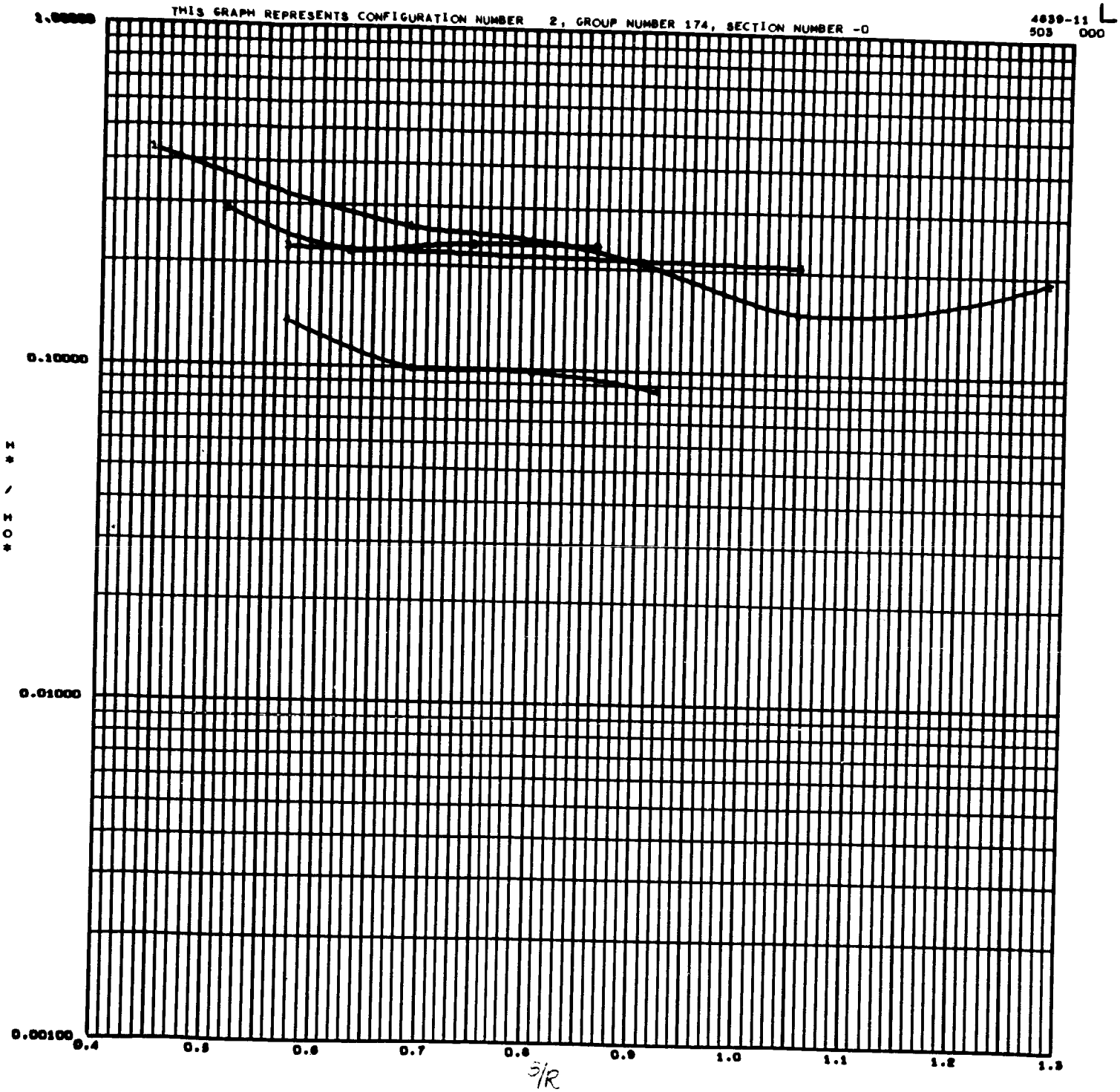
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 174
TOTAL PRESSURE 220.0 PSIA
REYNOLDS NUMBER PER INCH 0.0293 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1630.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 174, SECTION NUMBER -0

4639-11 L
503 000



S/R

[redacted]

[redacted]

HEAT TRANSFER TEST

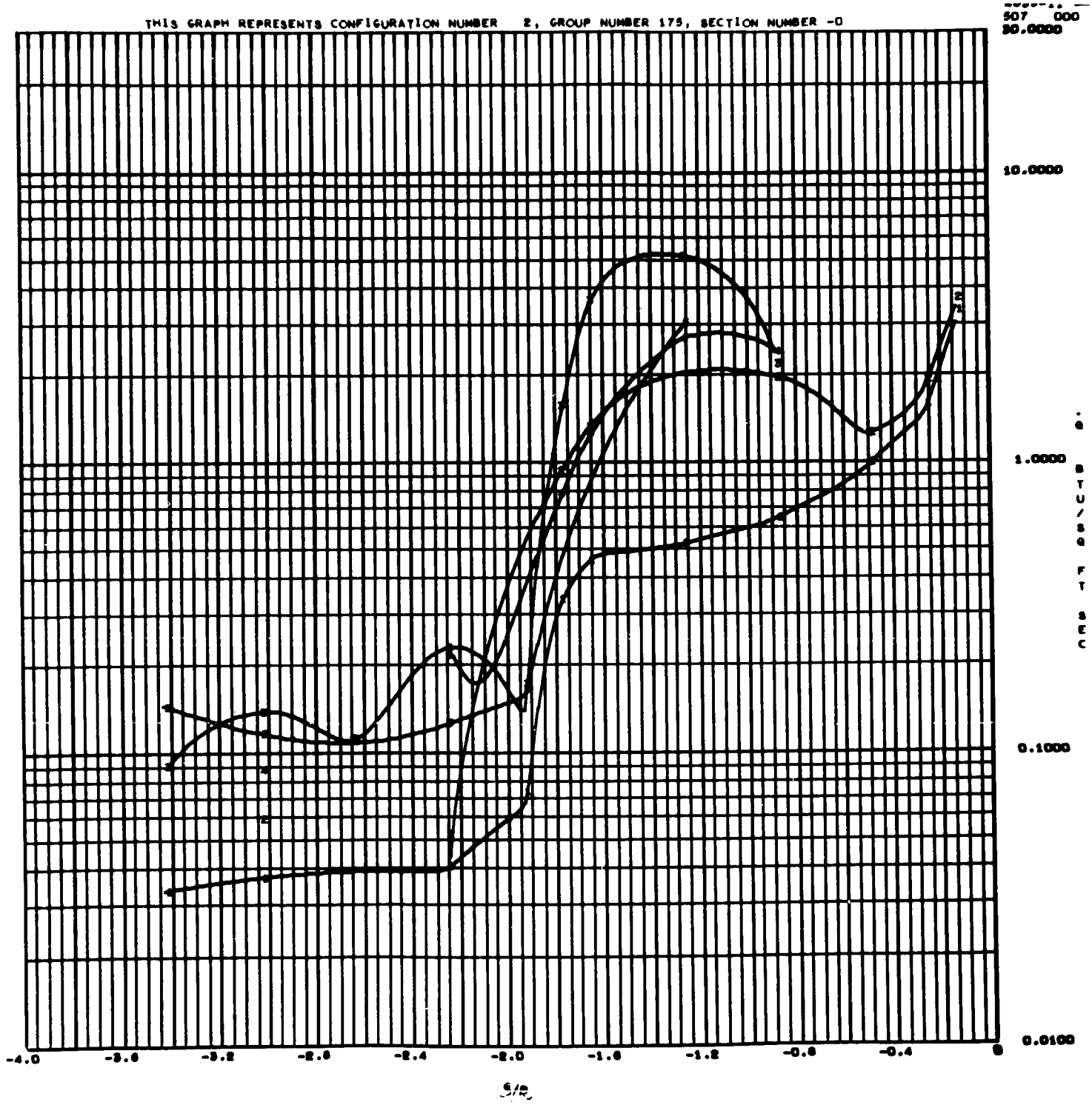
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 175
TOTAL PRESSURE 219.5 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 175, SECTION NUMBER -0



[redacted]

[redacted]

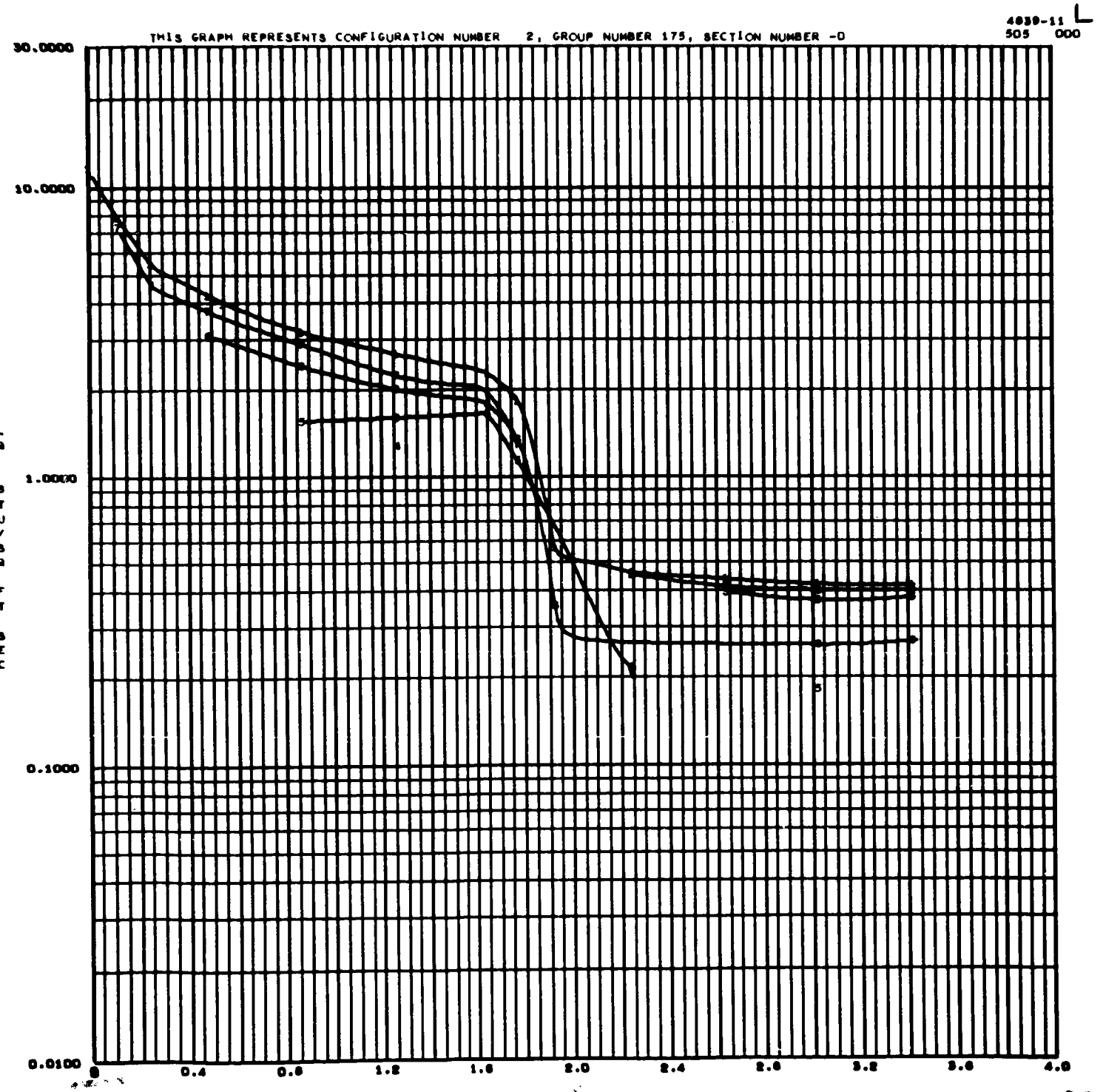
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 175
TOTAL PRESSURE 219.5 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

[redacted]

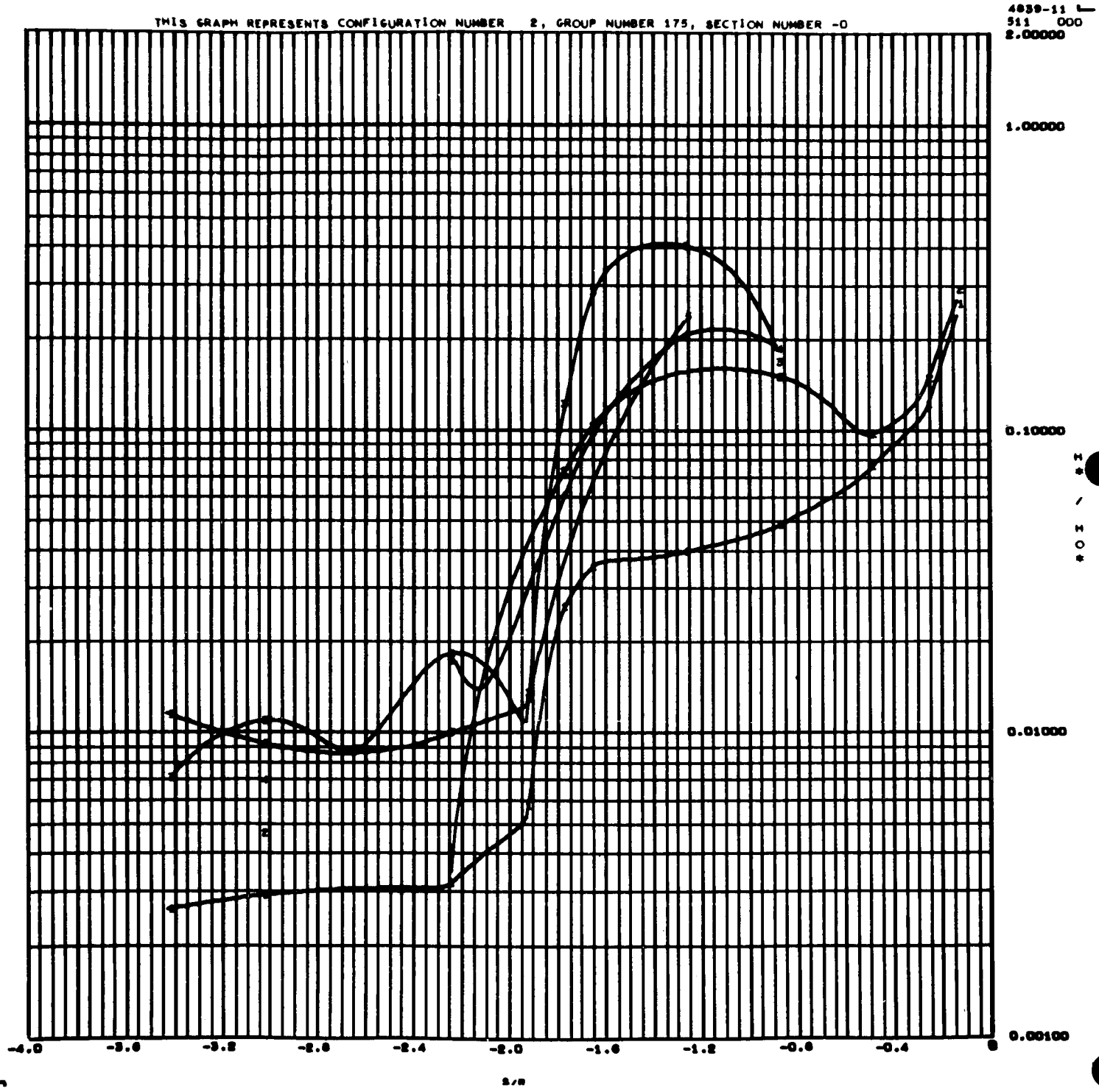
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 175
TOTAL PRESSURE 219.5 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1645.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

[redacted]

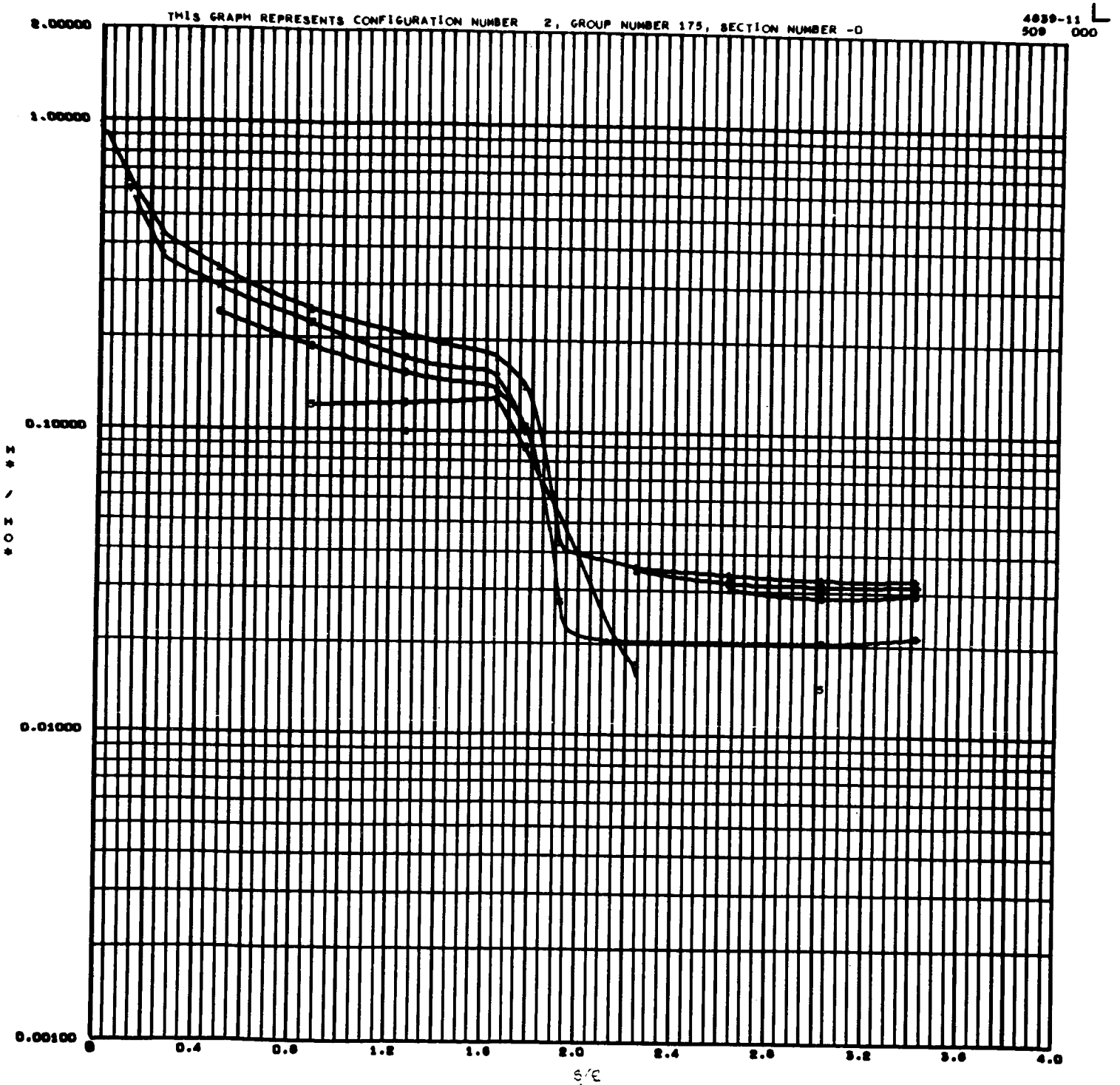
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 175
TOTAL PRESSURE 219.5 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

[redacted]

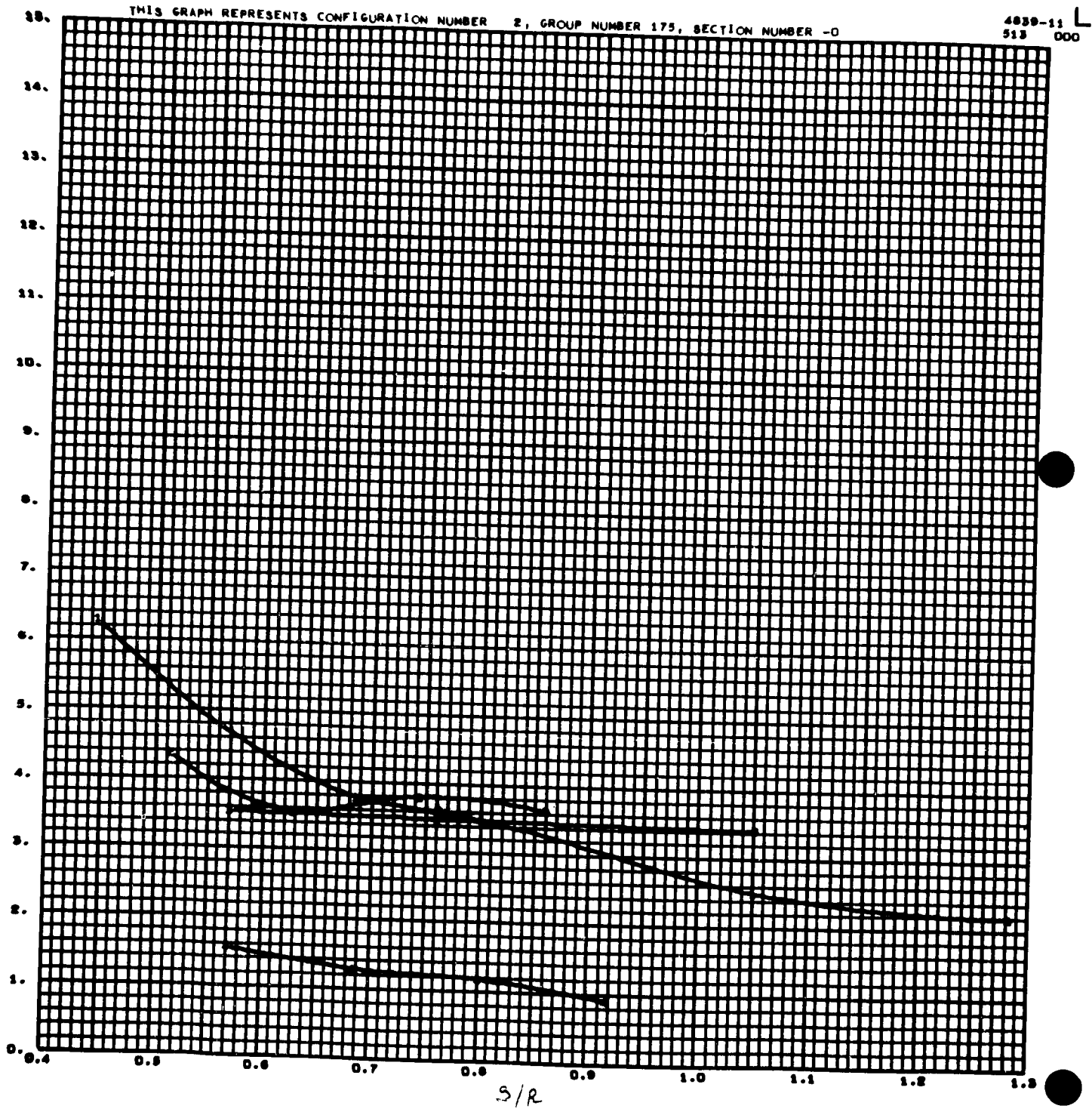
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 175
TOTAL PRESSURE 219.5 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
M_O * 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

[redacted]

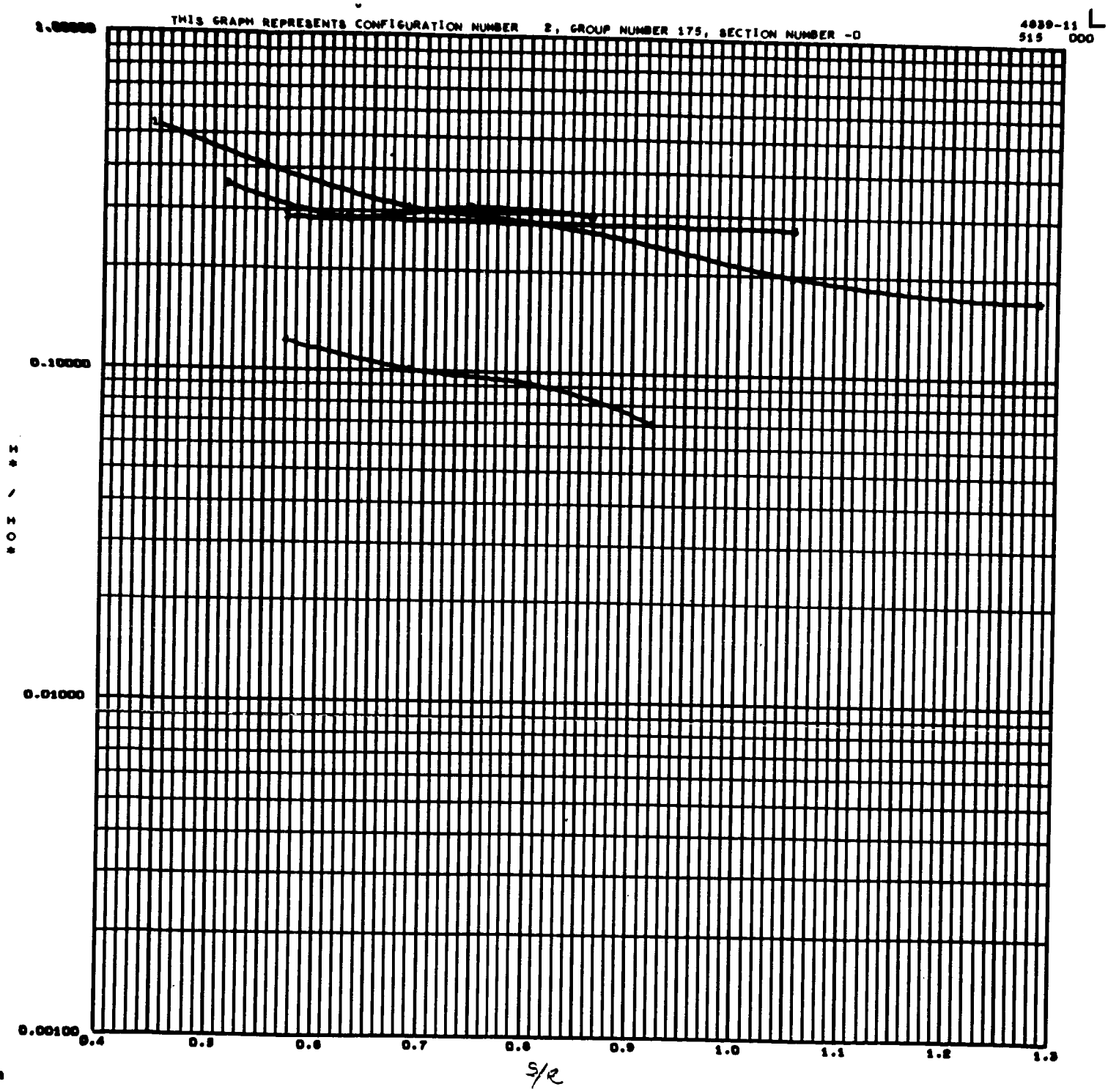
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.04
GROUP NO. 175
TOTAL PRESSURE 219.5 PSIA
REYNOLDS NUMBER PER INCH 0.0288 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1645.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

CONFIDENTIAL

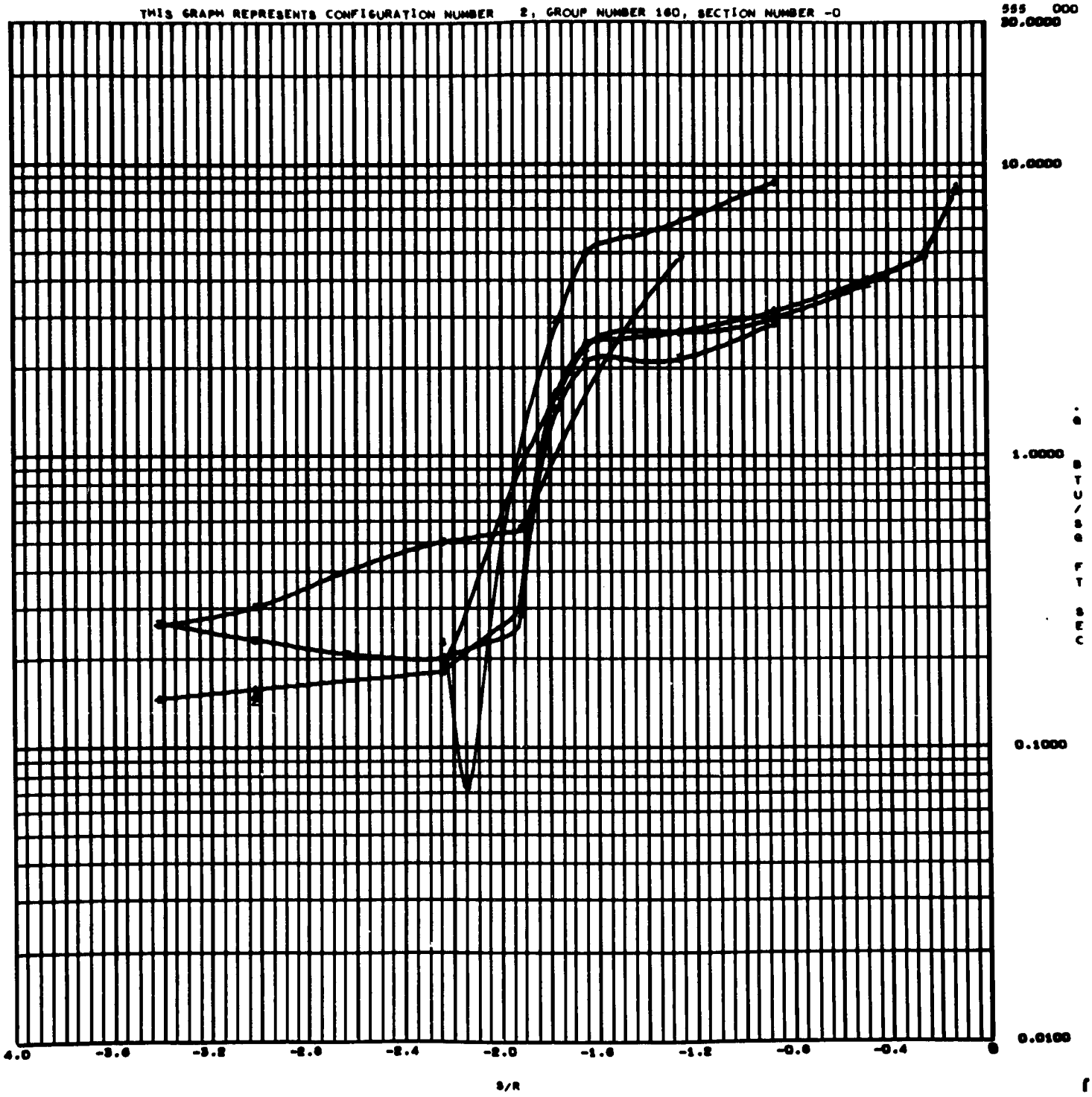
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 160
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0543 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1737.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



CONFIDENTIAL

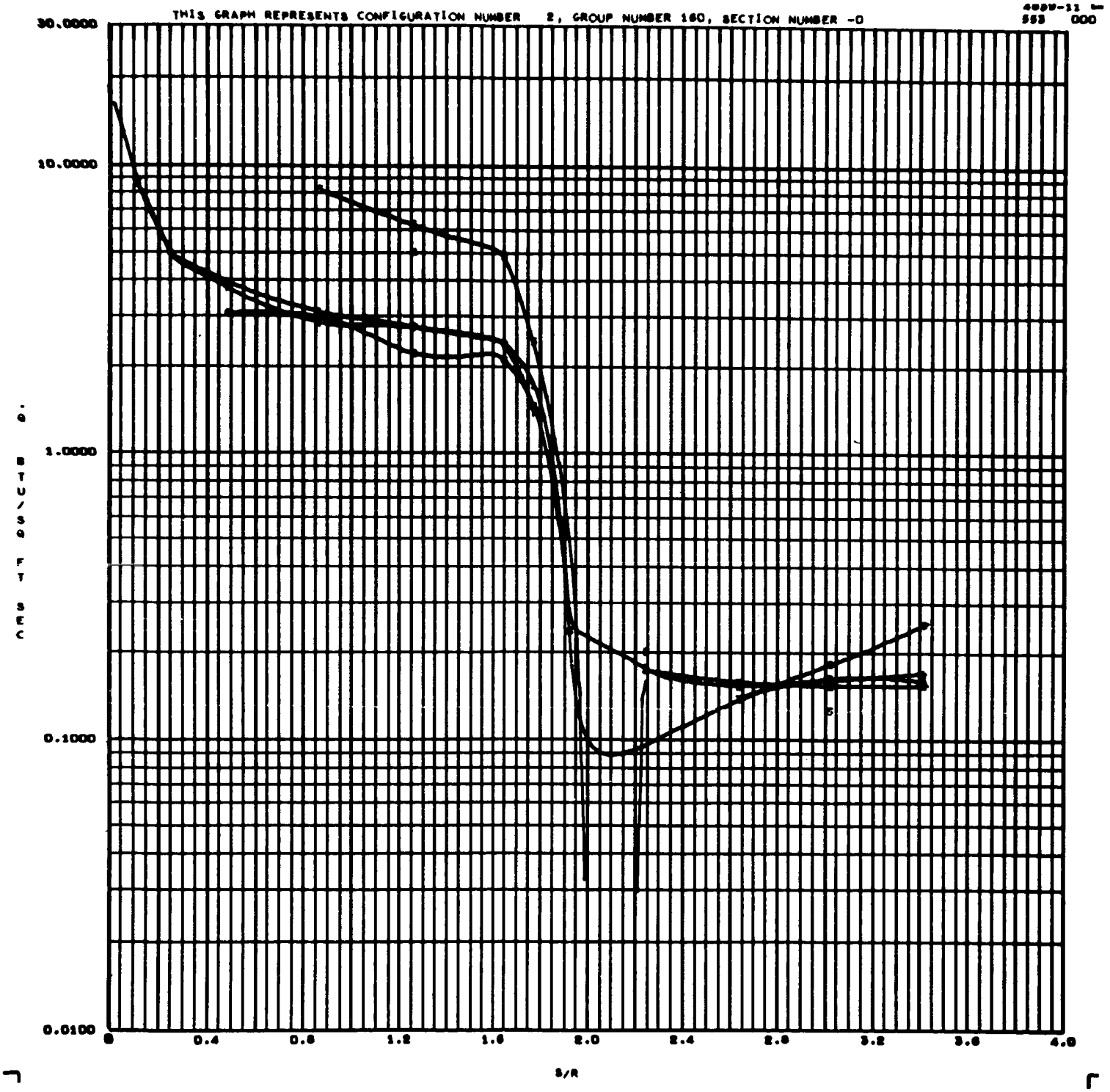
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 160
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0543 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1737.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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CONFIDENTIAL

HEAT TRANSFER TEST

APOLLO

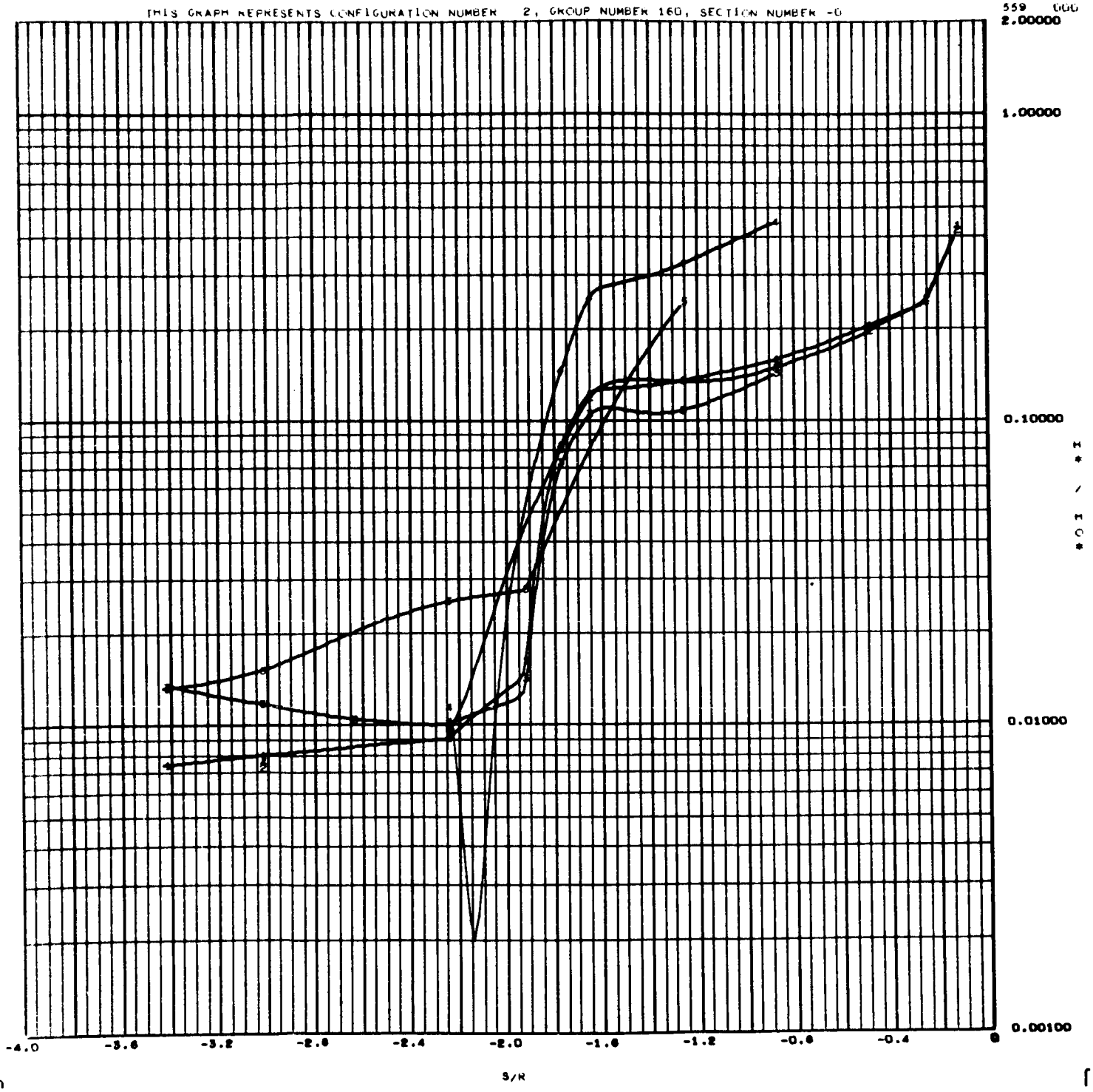
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 160
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0543 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1737.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 160, SECTION NUMBER -0

559 000



CONFIDENTIAL

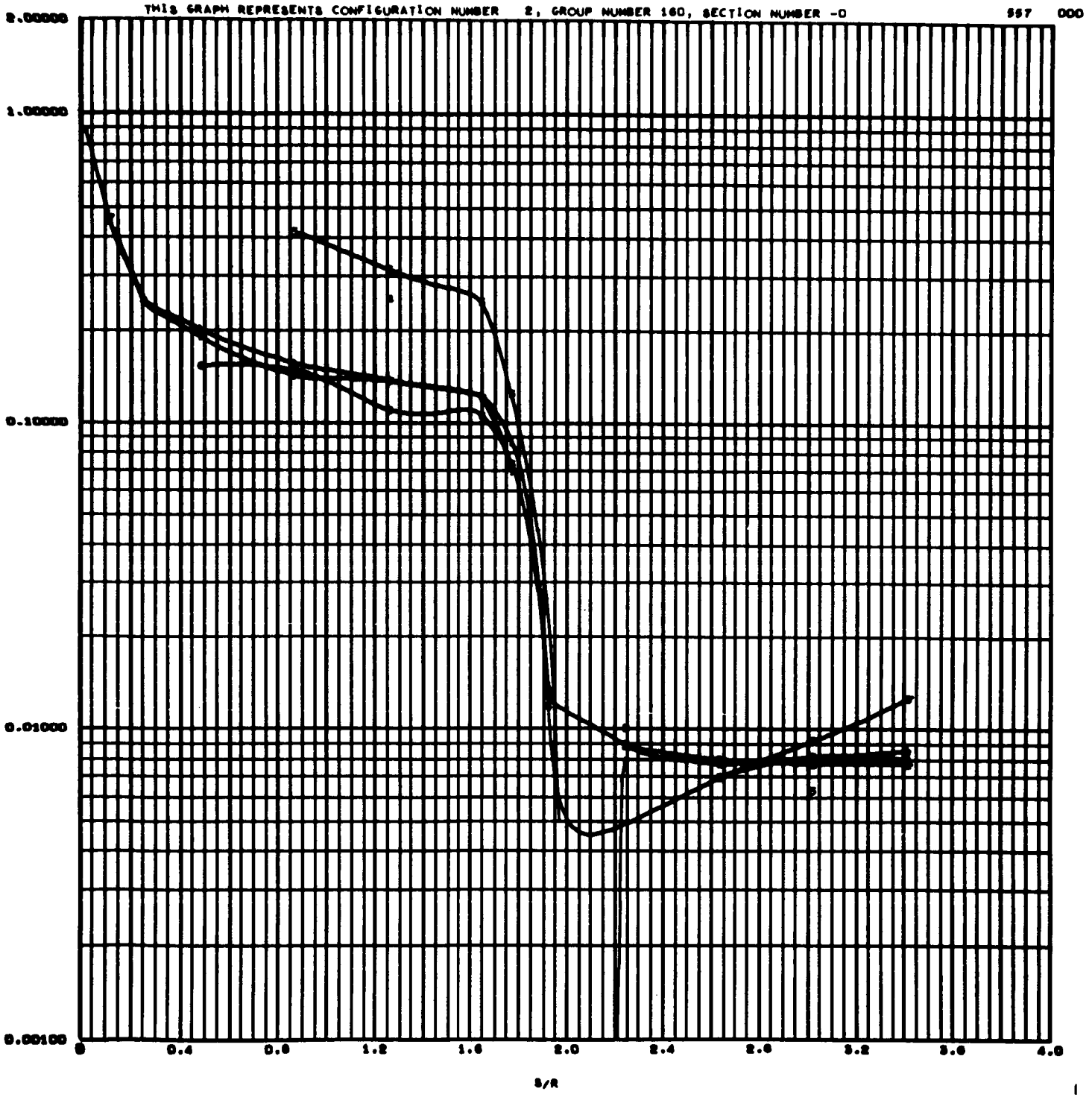
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 160
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0543 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1737.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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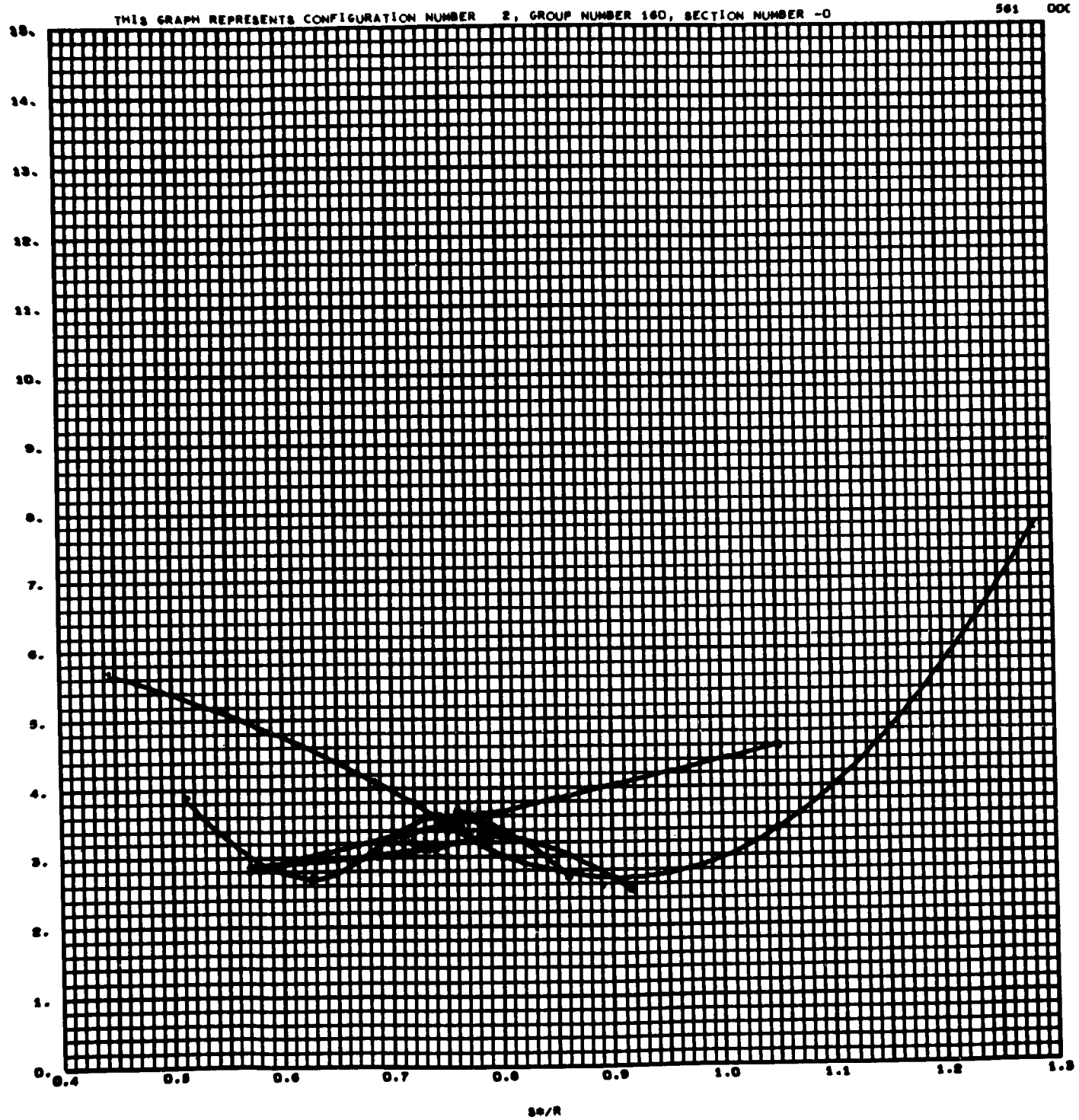
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 160
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0543 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1737.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA



[redacted]

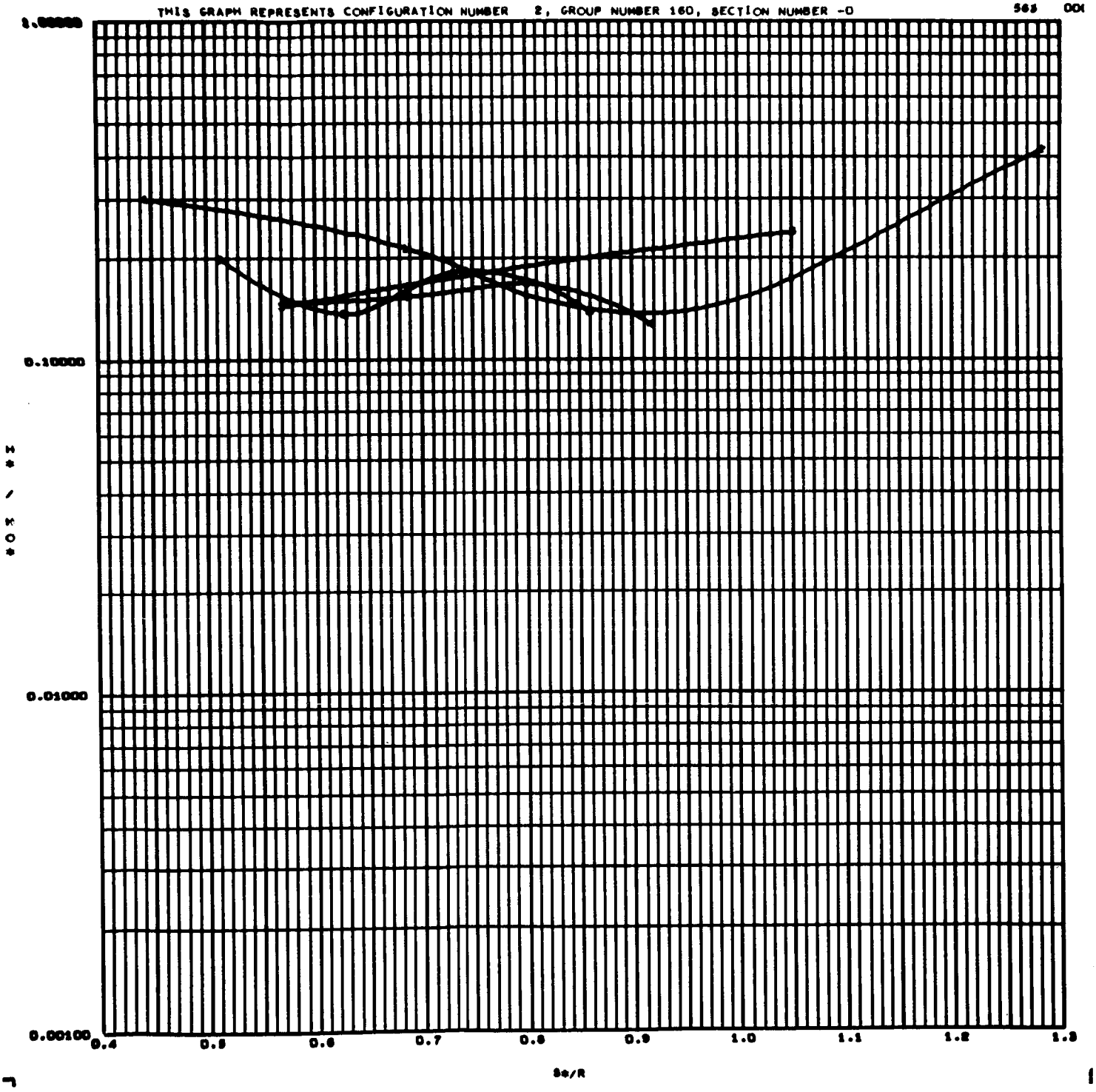
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 160
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0543 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1737.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 161
TOTAL PRESSURE 459.5 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

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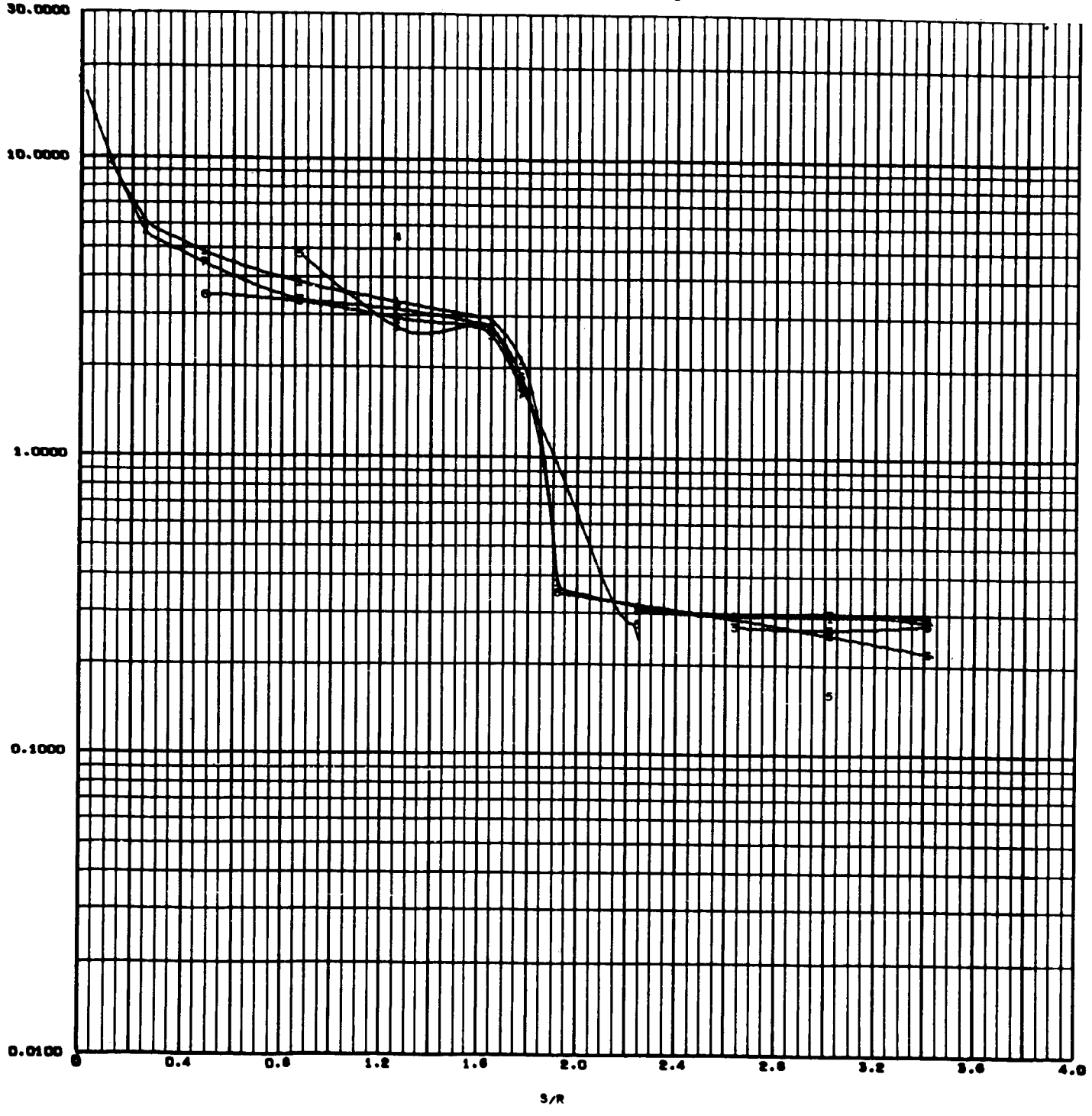
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 161
TOTAL PRESSURE 459.5 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

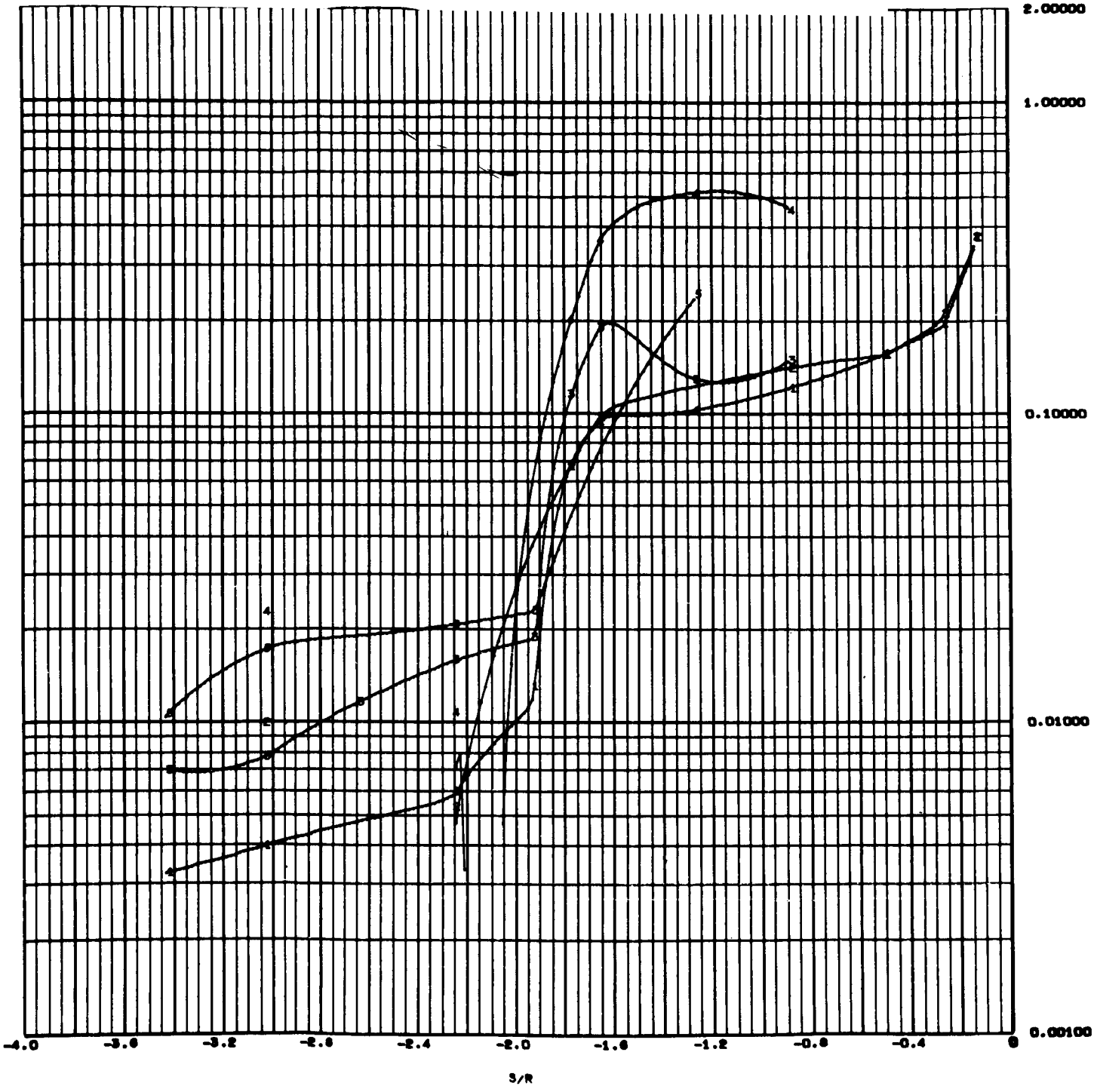
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 161
TOTAL PRESSURE 459.5 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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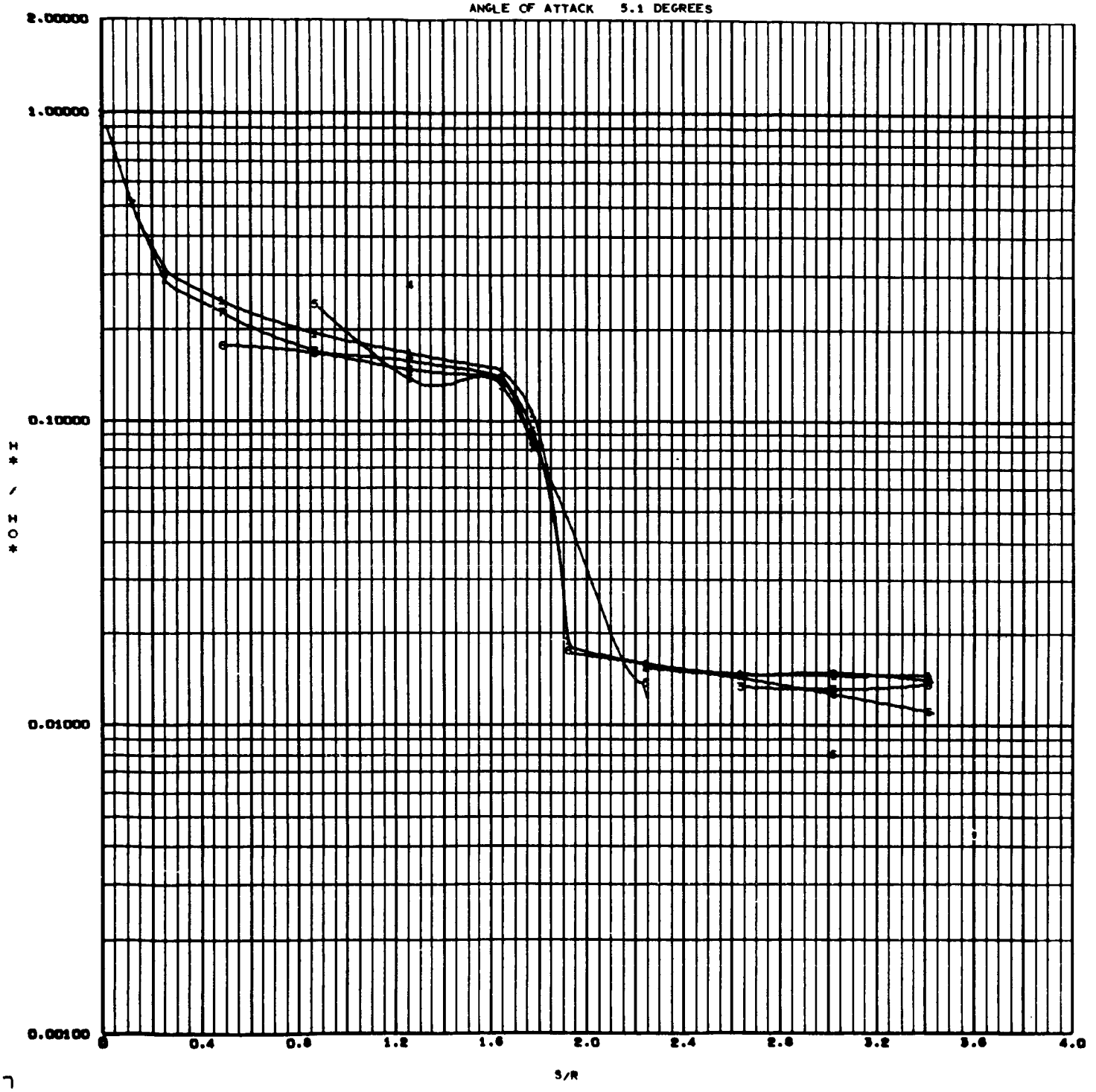
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 161
TOTAL PRESSURE 459.5 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

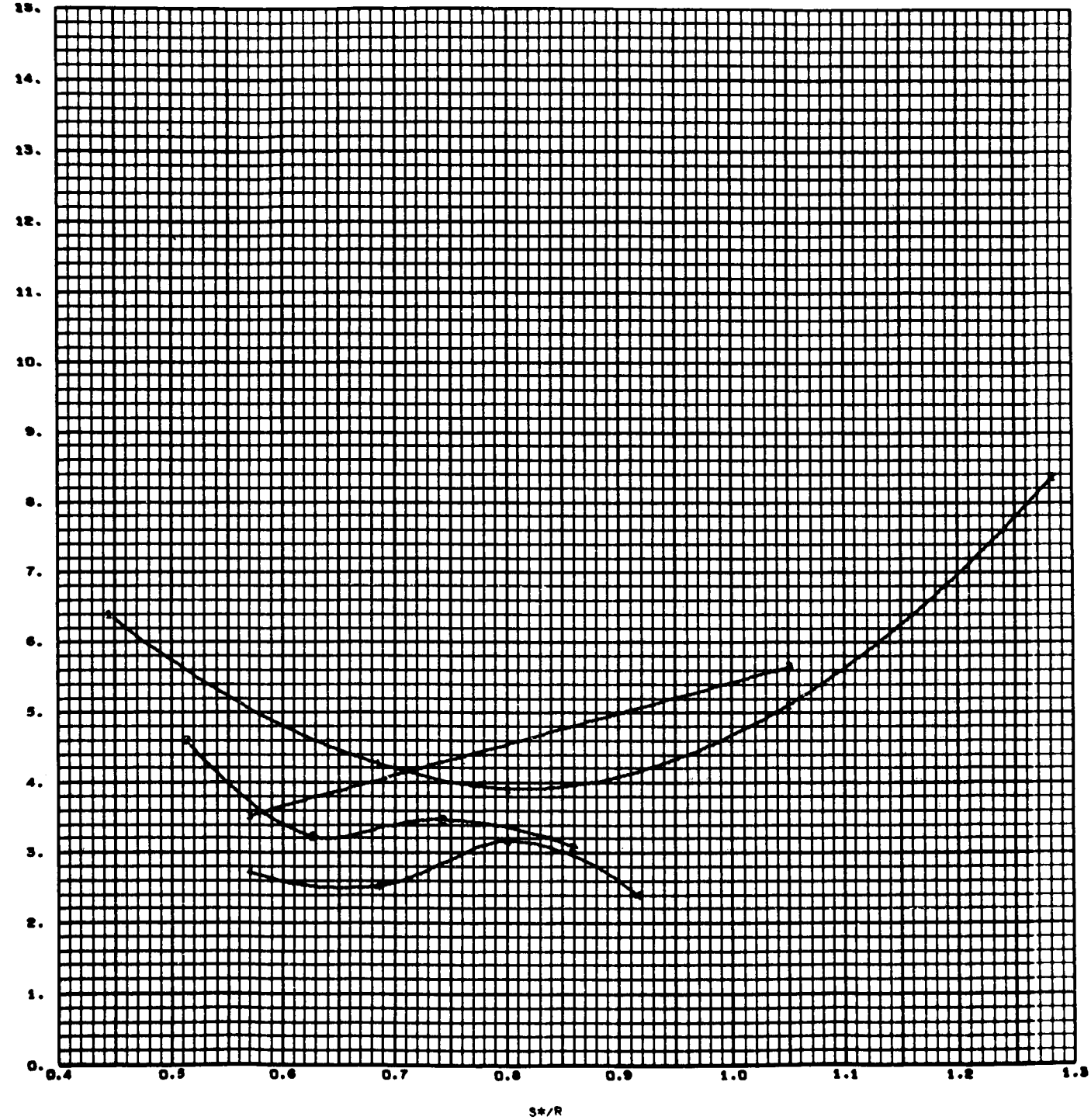
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 161
TOTAL PRESSURE 459.5 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

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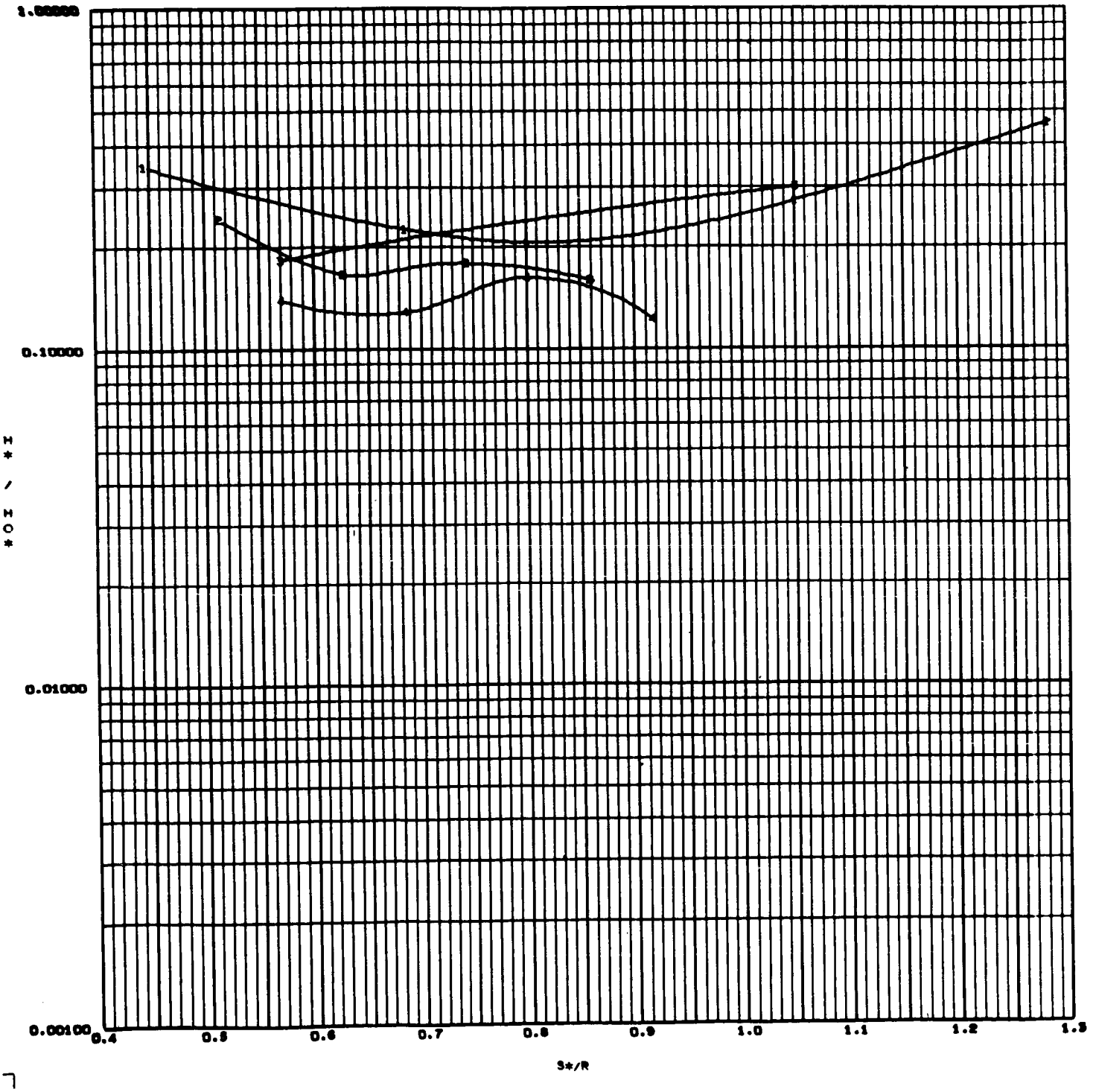
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 161
TOTAL PRESSURE 459.5 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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[redacted]

HEAT TRANSFER TEST

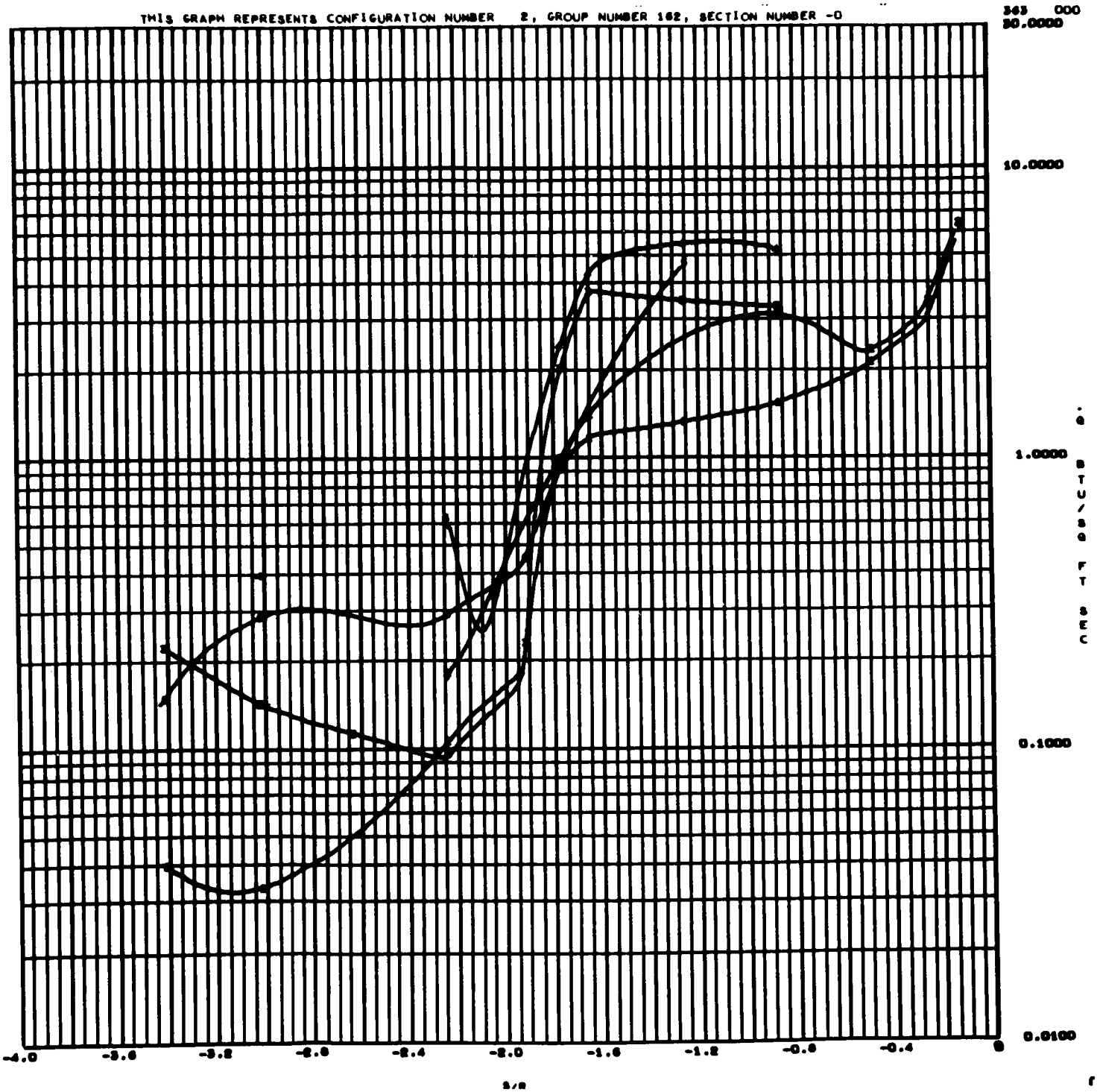
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 162
TOTAL PRESSURE 461.0 PSIA
REYNOLDS NUMBER PER INCH 0.0554 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.10 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 162, SECTION NUMBER -0



[redacted]

CONFIDENTIAL

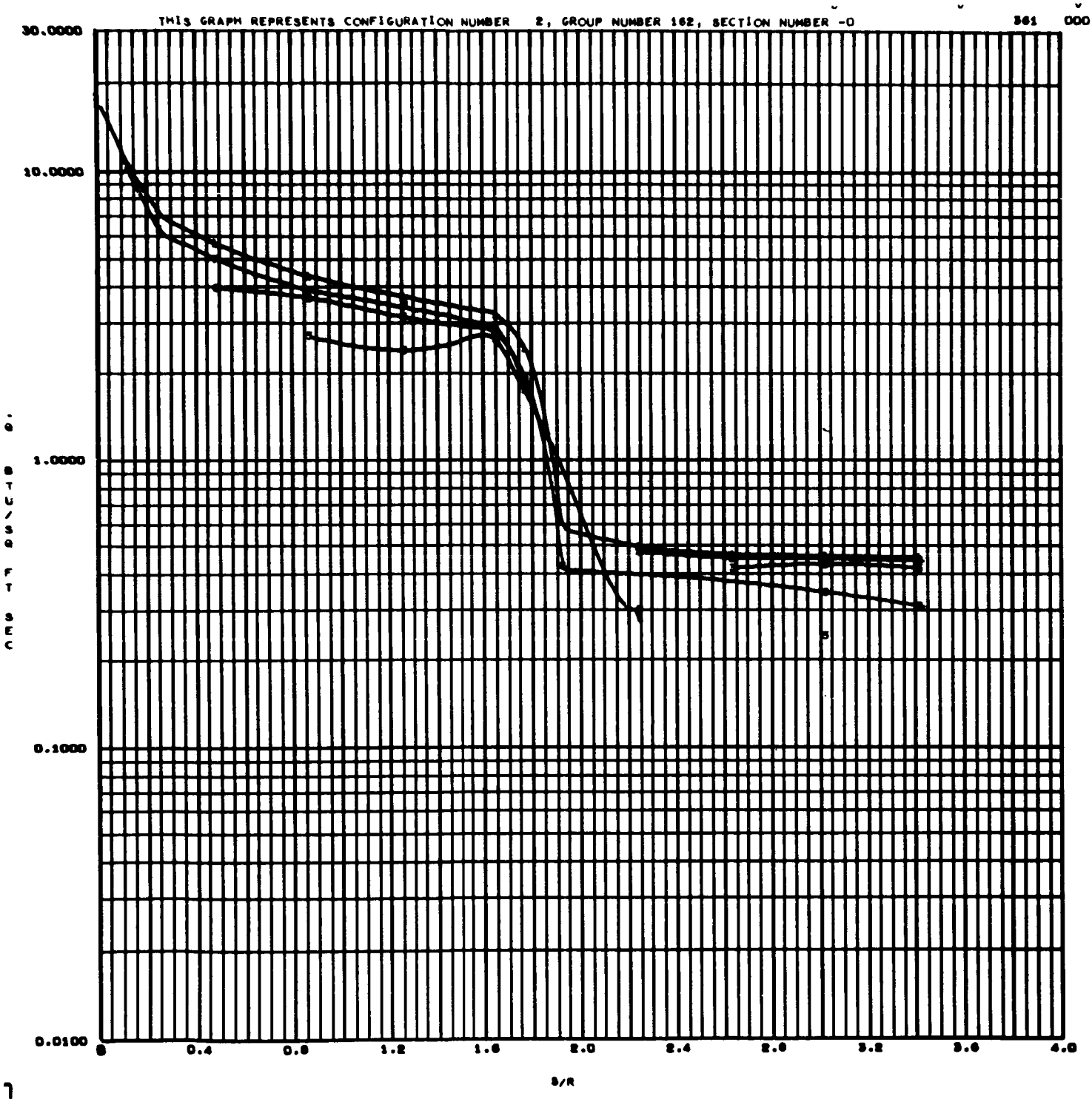
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 162
TOTAL PRESSURE 461.0 PSIA
REYNOLDS NUMBER PER INCH 0.0554 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.10 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

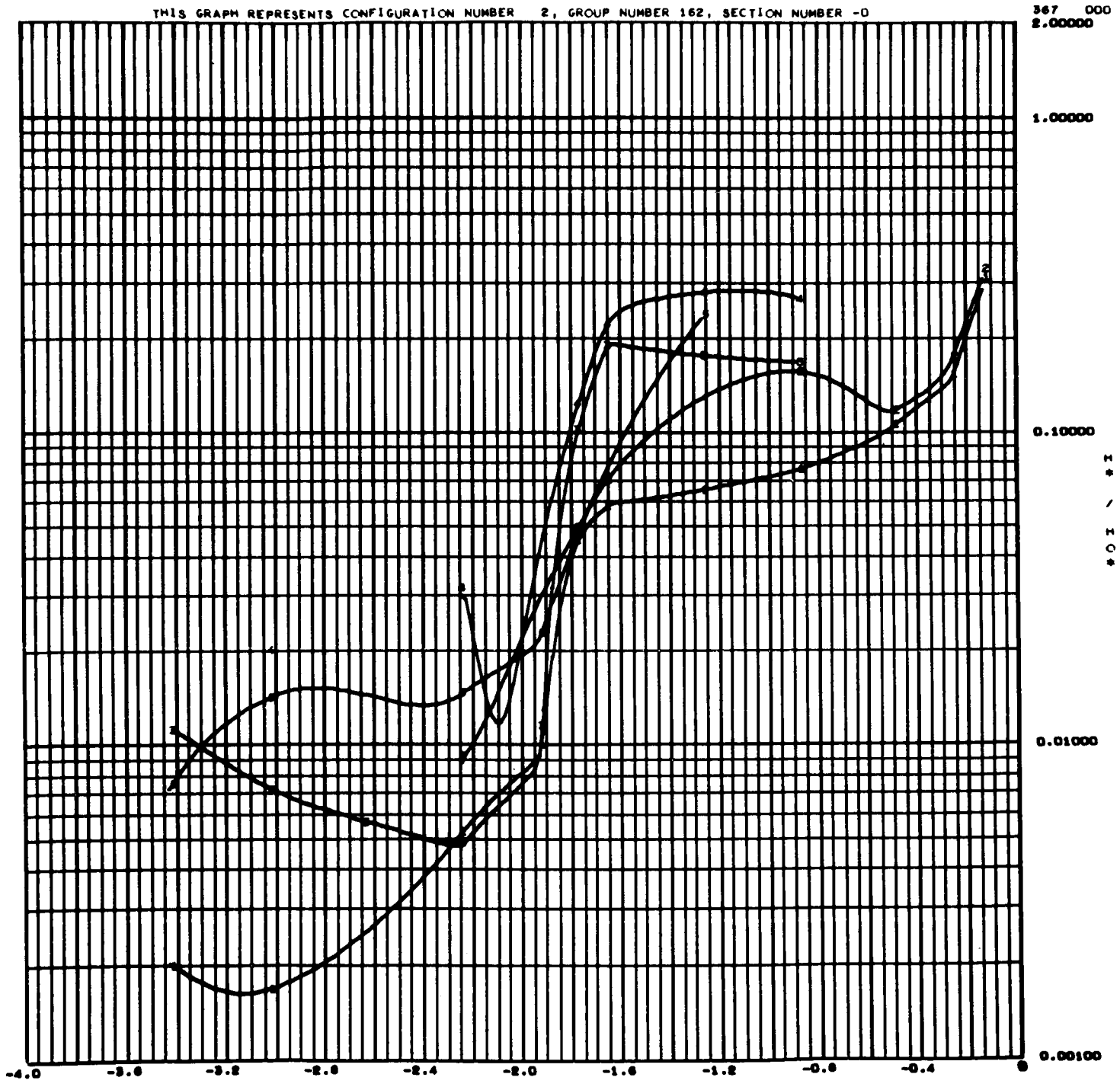
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 162
TOTAL PRESSURE 461.0 PSIA
REYNOLDS NUMBER PER INCH 0.0554 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.10 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 162, SECTION NUMBER -0



CONFIDENTIAL

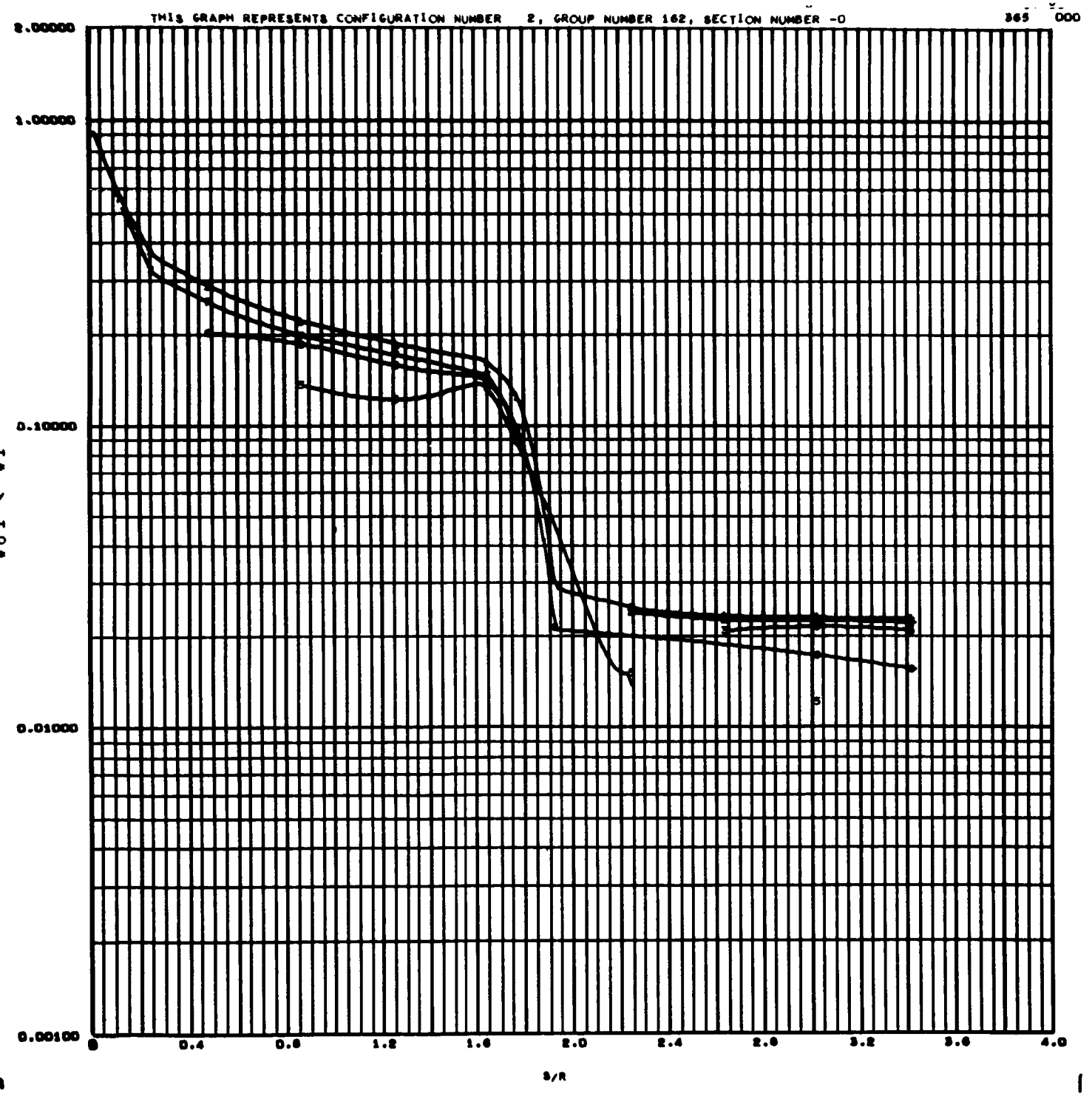
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 162
TOTAL PRESSURE 461.0 PSIA
REYNOLDS NUMBER PER INCH 0.0554 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.10 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

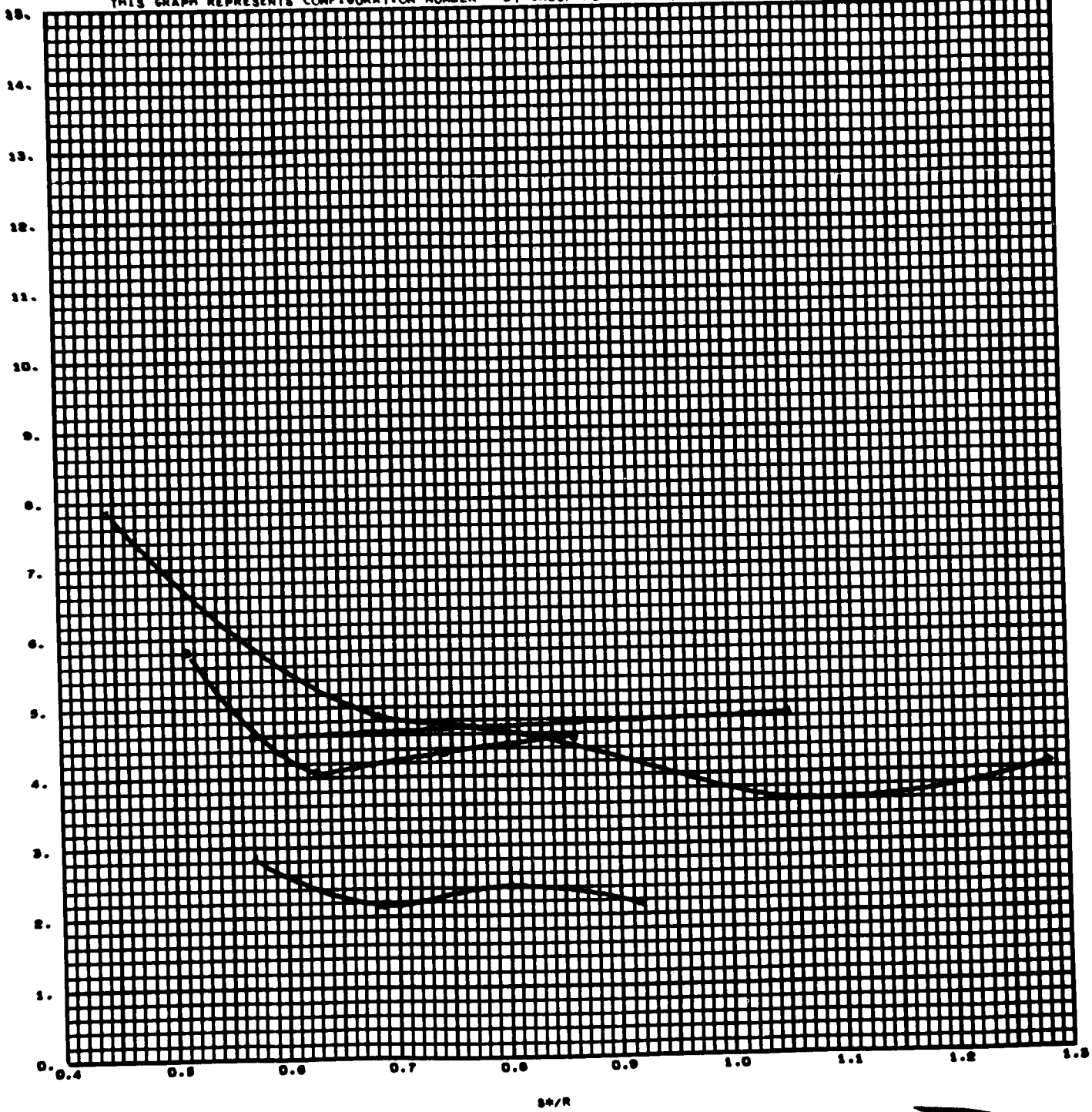
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 162
TOTAL PRESSURE 461.0 PSIA
REYNOLDS NUMBER PER INCH 0.0554 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.10 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 162, SECTION NUMBER -0

369 000



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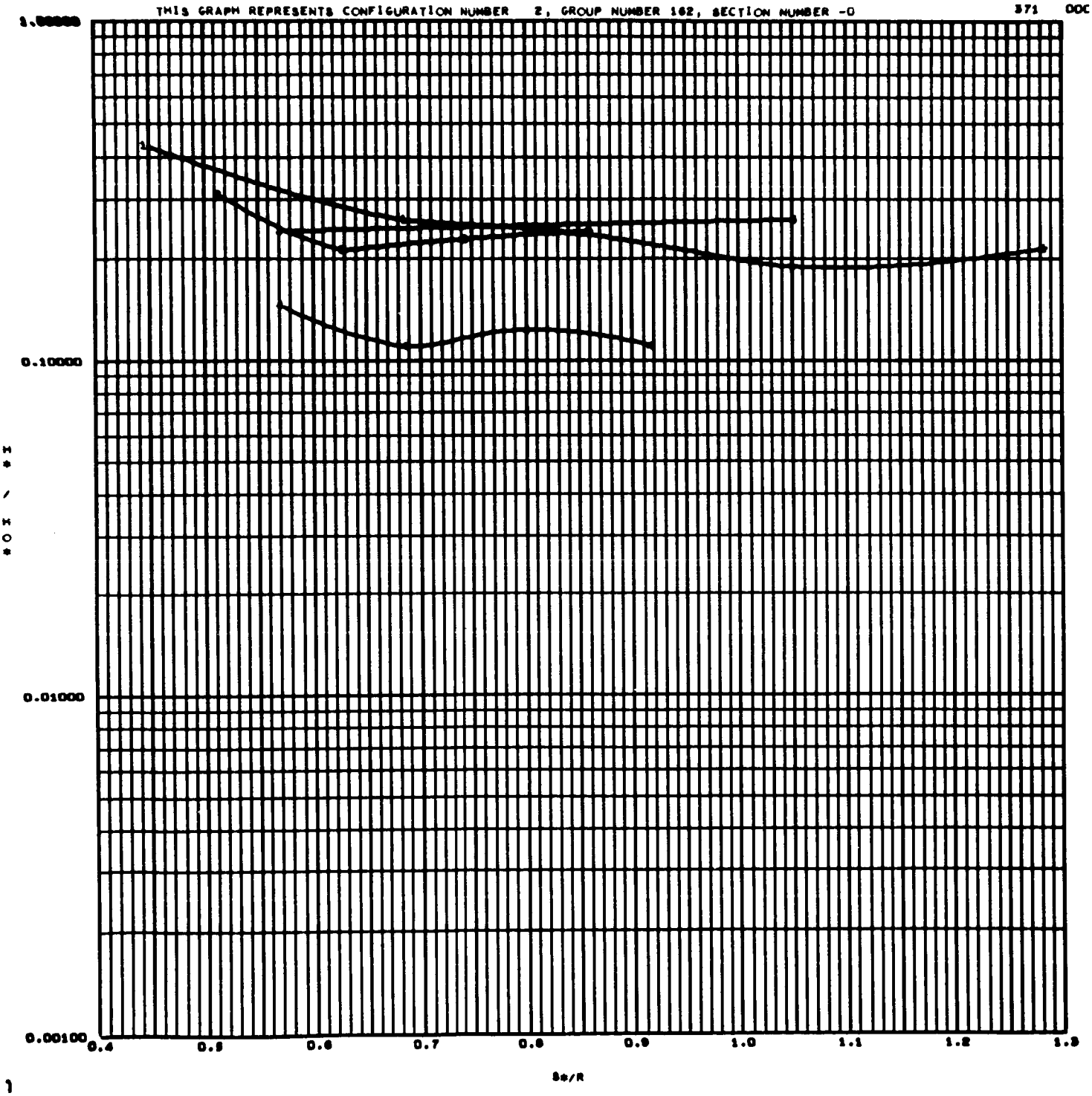
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 162
TOTAL PRESSURE 461.0 PSIA
REYNOLDS NUMBER PER INCH 0.0554 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1720.10 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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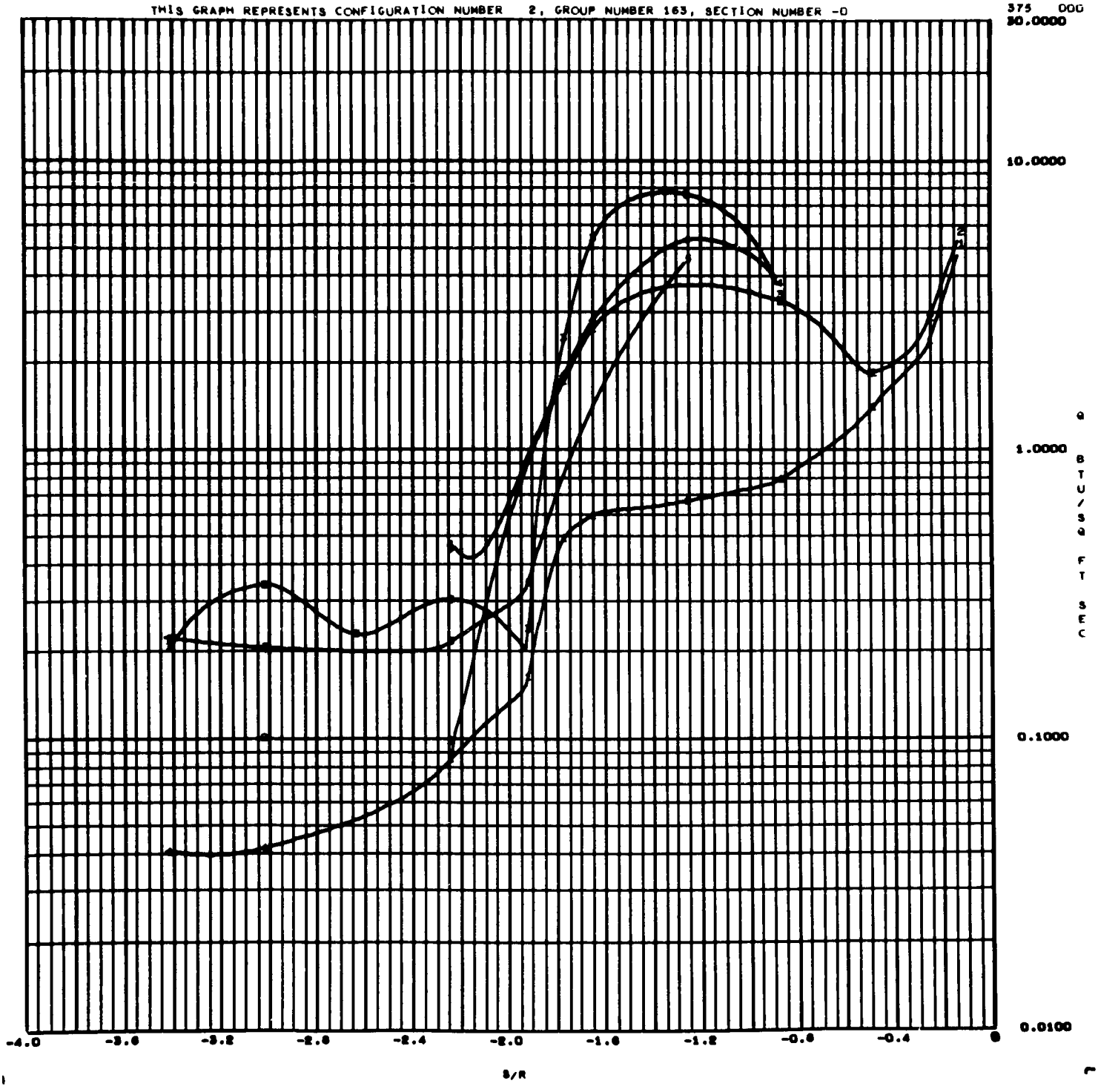
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 163
TOTAL PRESSURE 465.5 PSIA
REYNOLDS NUMBER PER INCH 0.0556 X 10^6
M_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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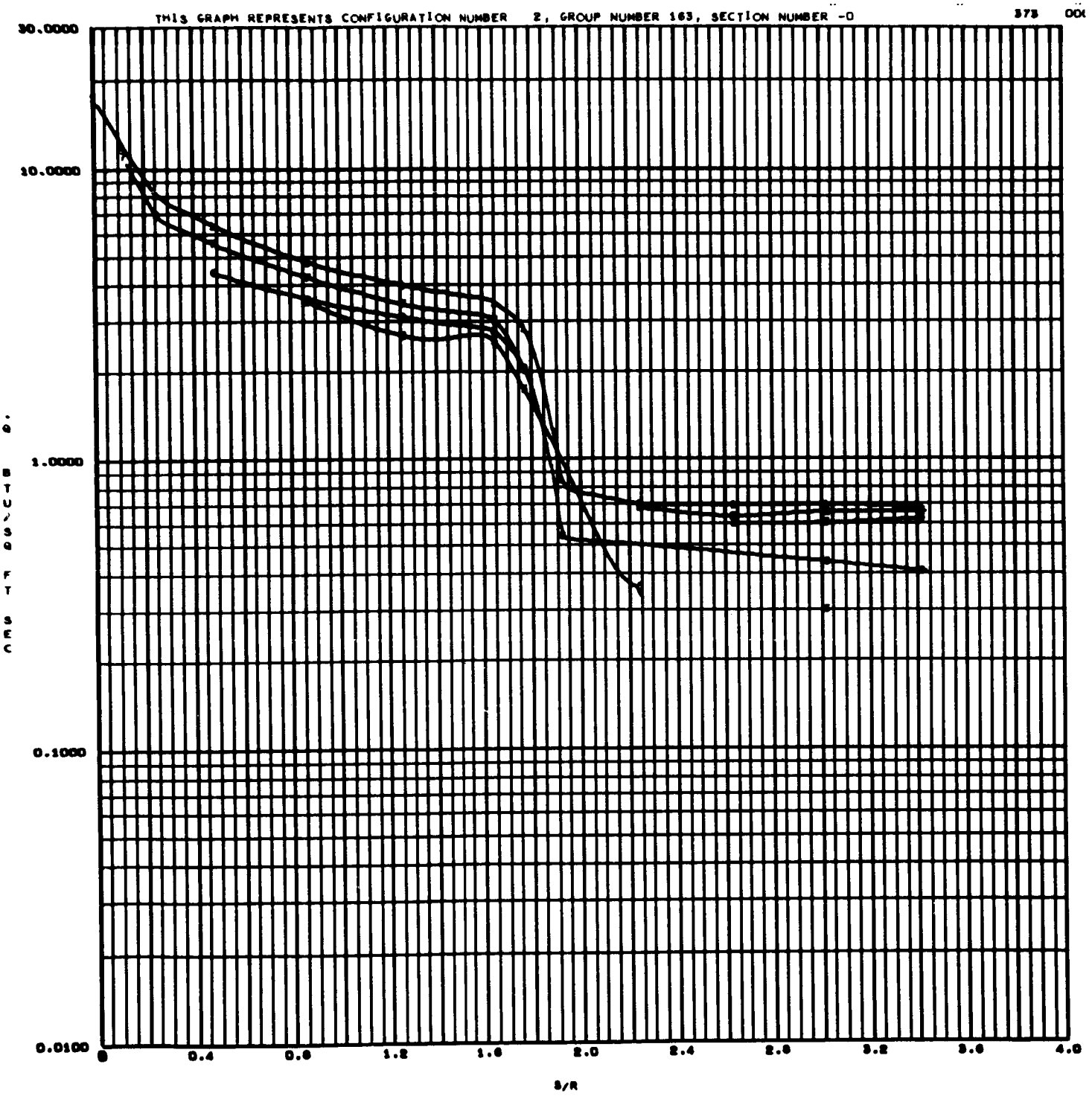
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 163
TOTAL PRESSURE 465.5 PSIA
REYNOLDS NUMBER PER INCH 0.0556 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

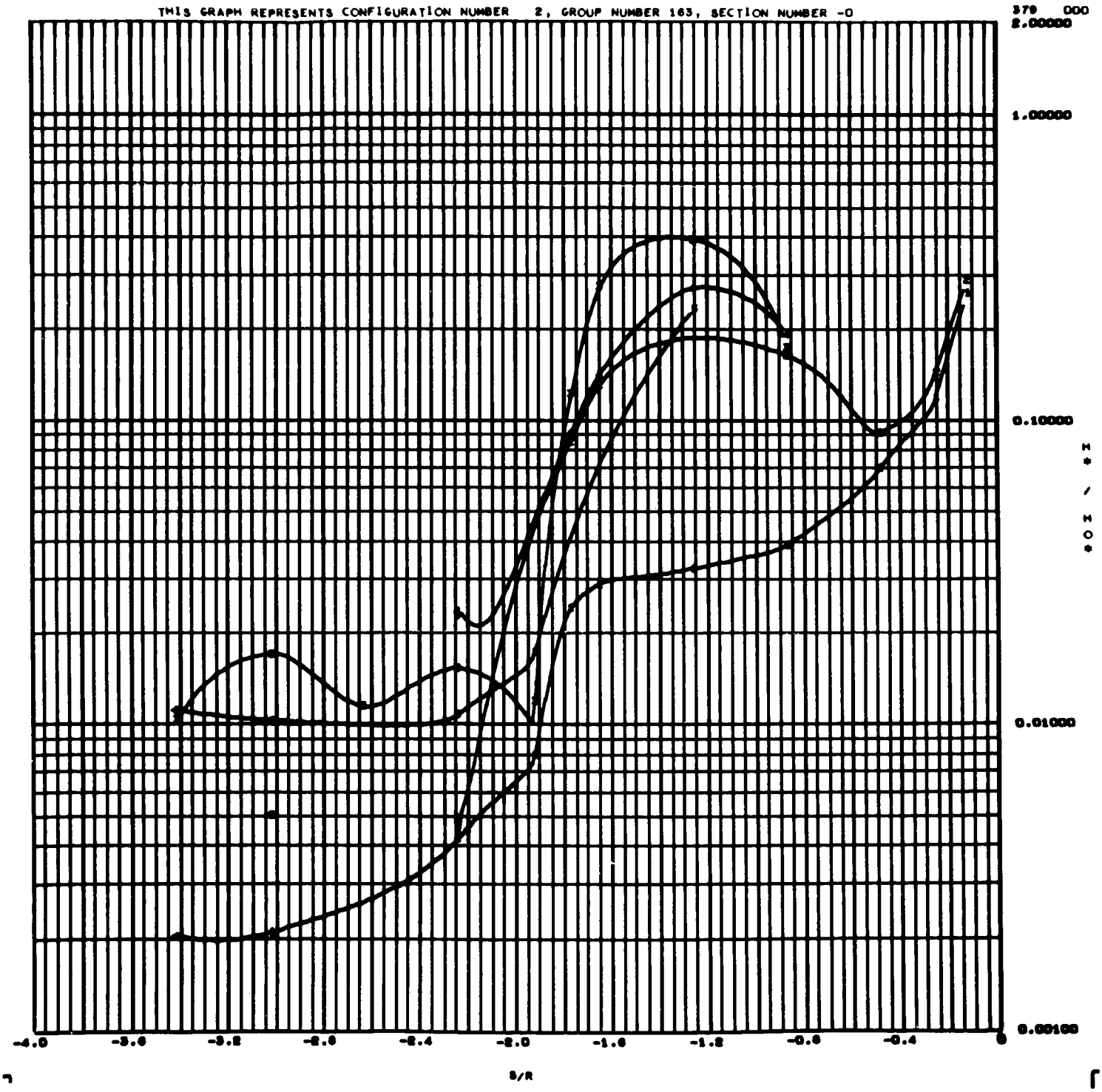
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 163
TOTAL PRESSURE 465.5 PSIA
REYNOLDS NUMBER PER INCH 0.0556 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 163, SECTION NUMBER -0



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[redacted]

HEAT TRANSFER TEST

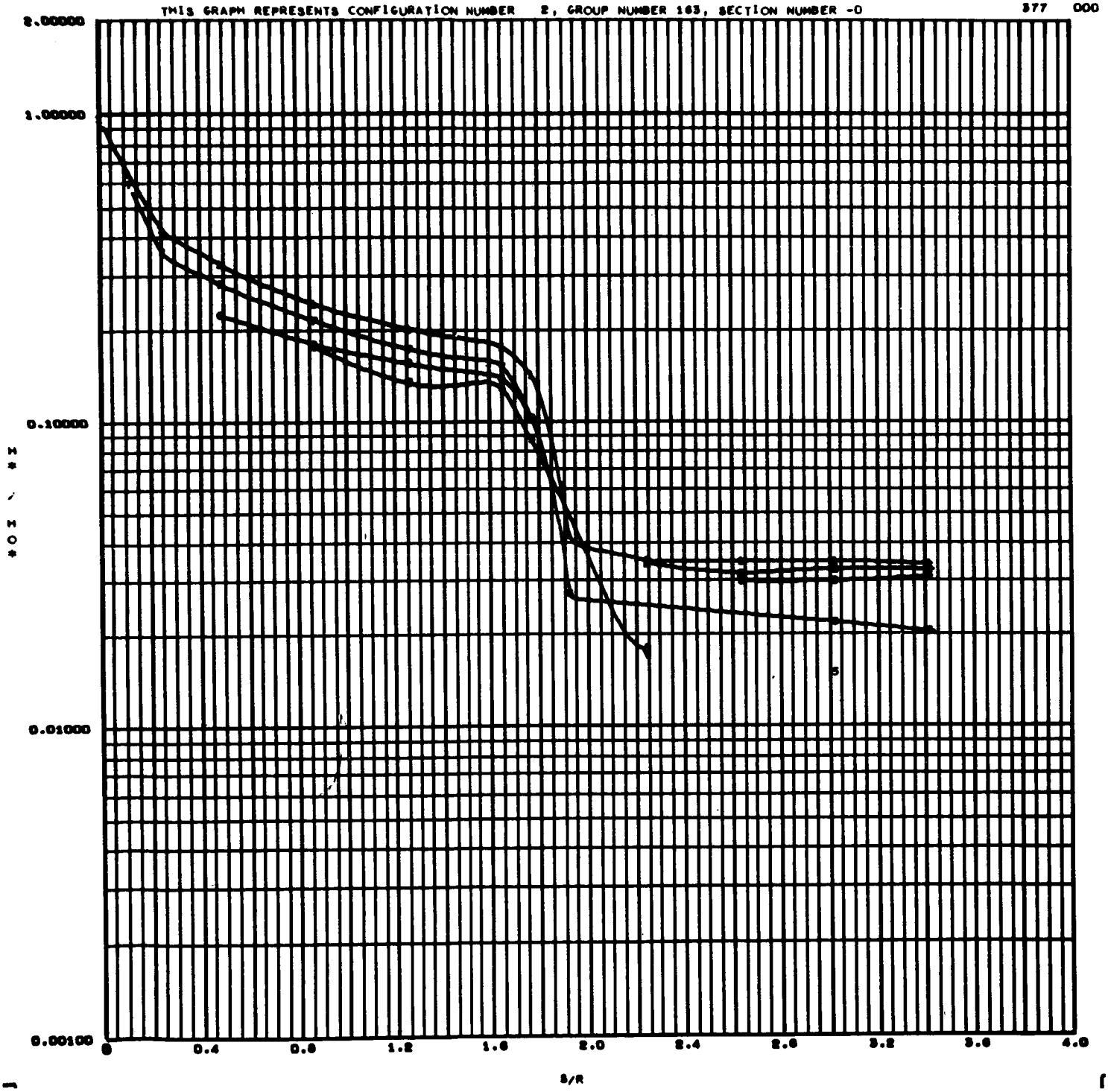
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 163
TOTAL PRESSURE 465.5 PSIA
REYNOLDS NUMBER PER INCH 0.0556 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 163, SECTION NUMBER -0



[redacted]

~~CONFIDENTIAL~~

HEAT TRANSFER TEST

APOLLO

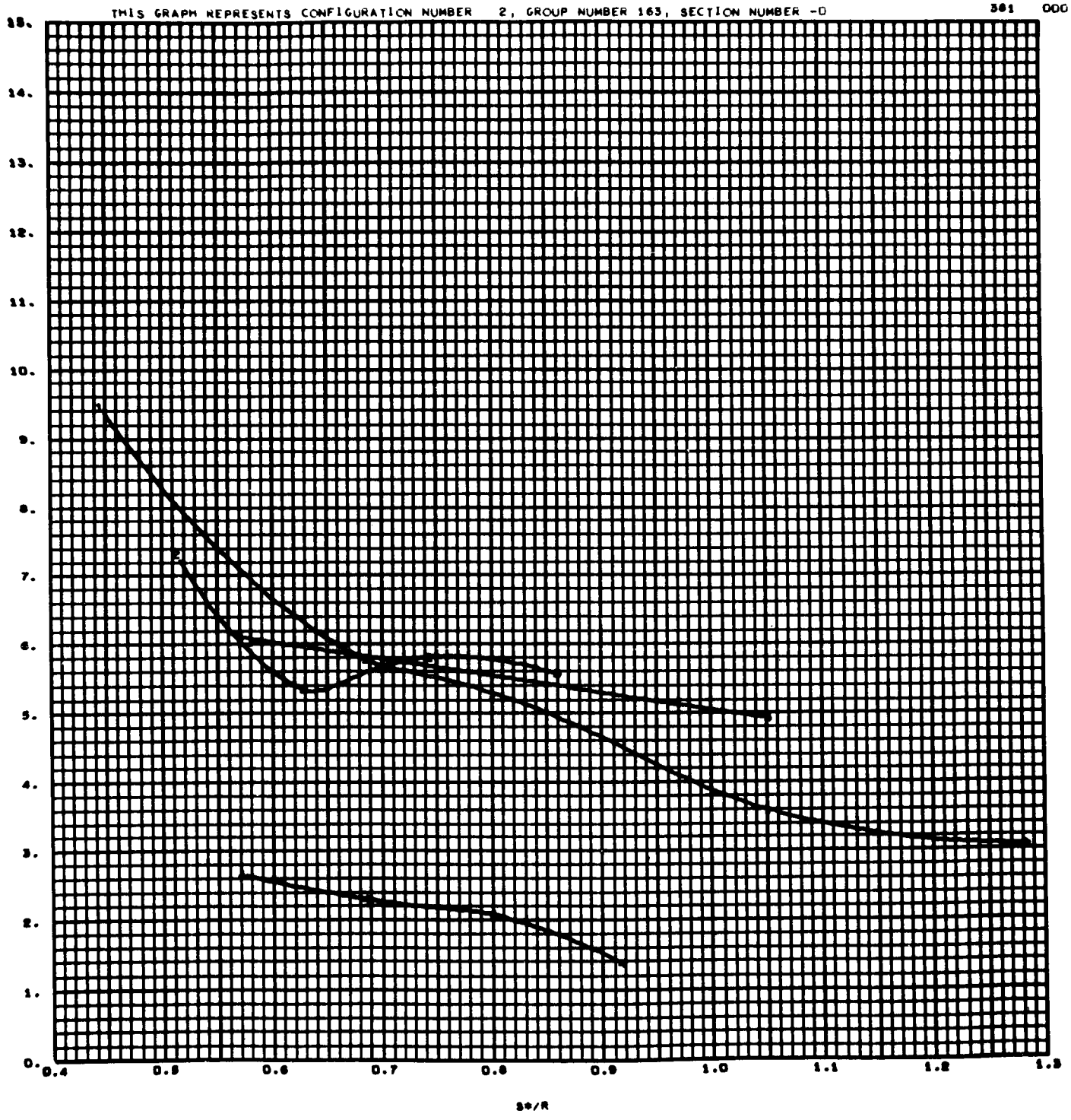
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 163
TOTAL PRESSURE 465.5 PSIA
REYNOLDS NUMBER PER INCH 0.0556 x 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 163, SECTION NUMBER -0

301 000



~~CONFIDENTIAL~~

CONFIDENTIAL

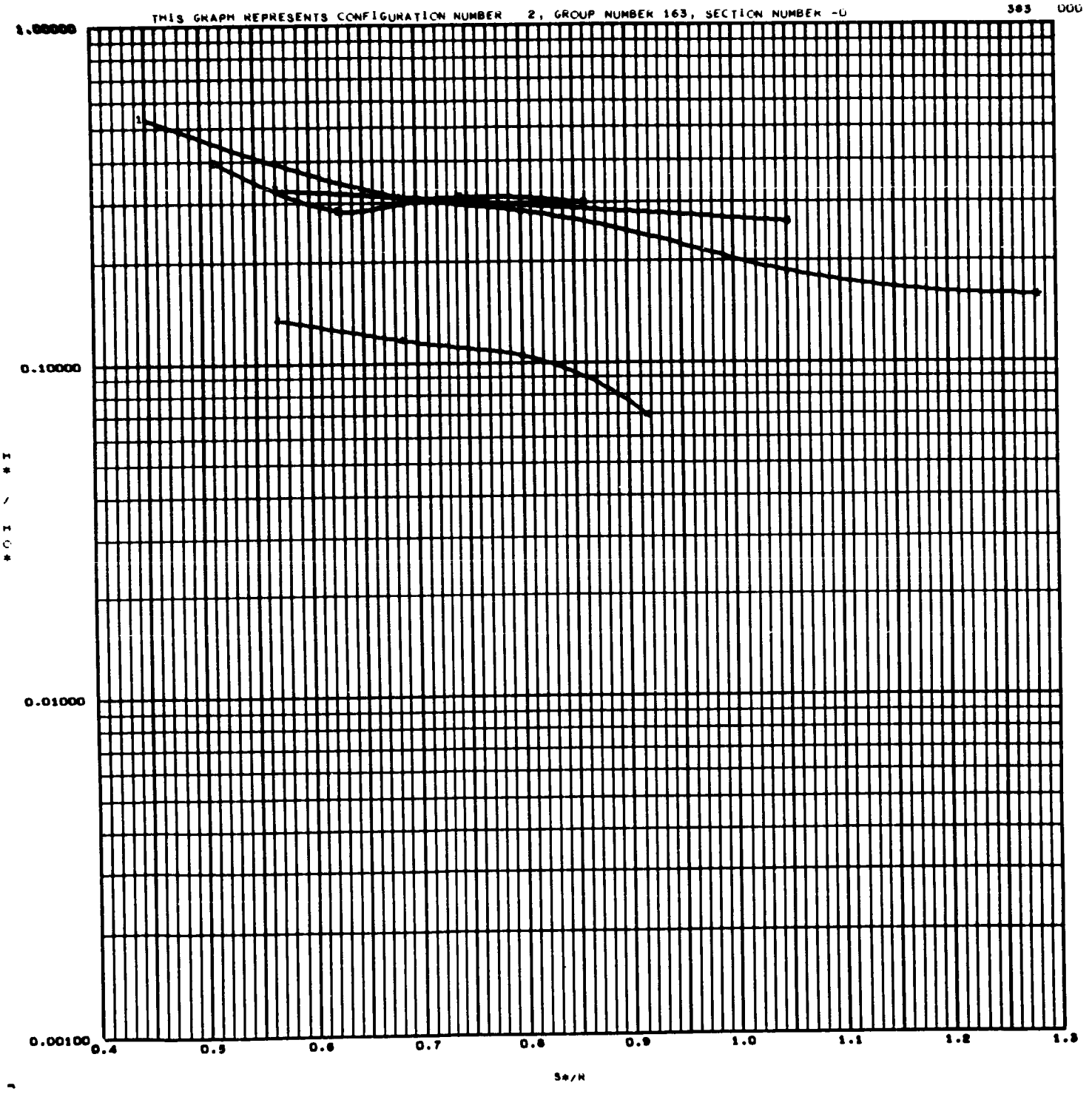
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.09
GROUP NO. 163
TOTAL PRESSURE 465.5 PSIA
REYNOLDS NUMBER PER INCH 0.0556 x 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1726.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



CONFIDENTIAL

[redacted]

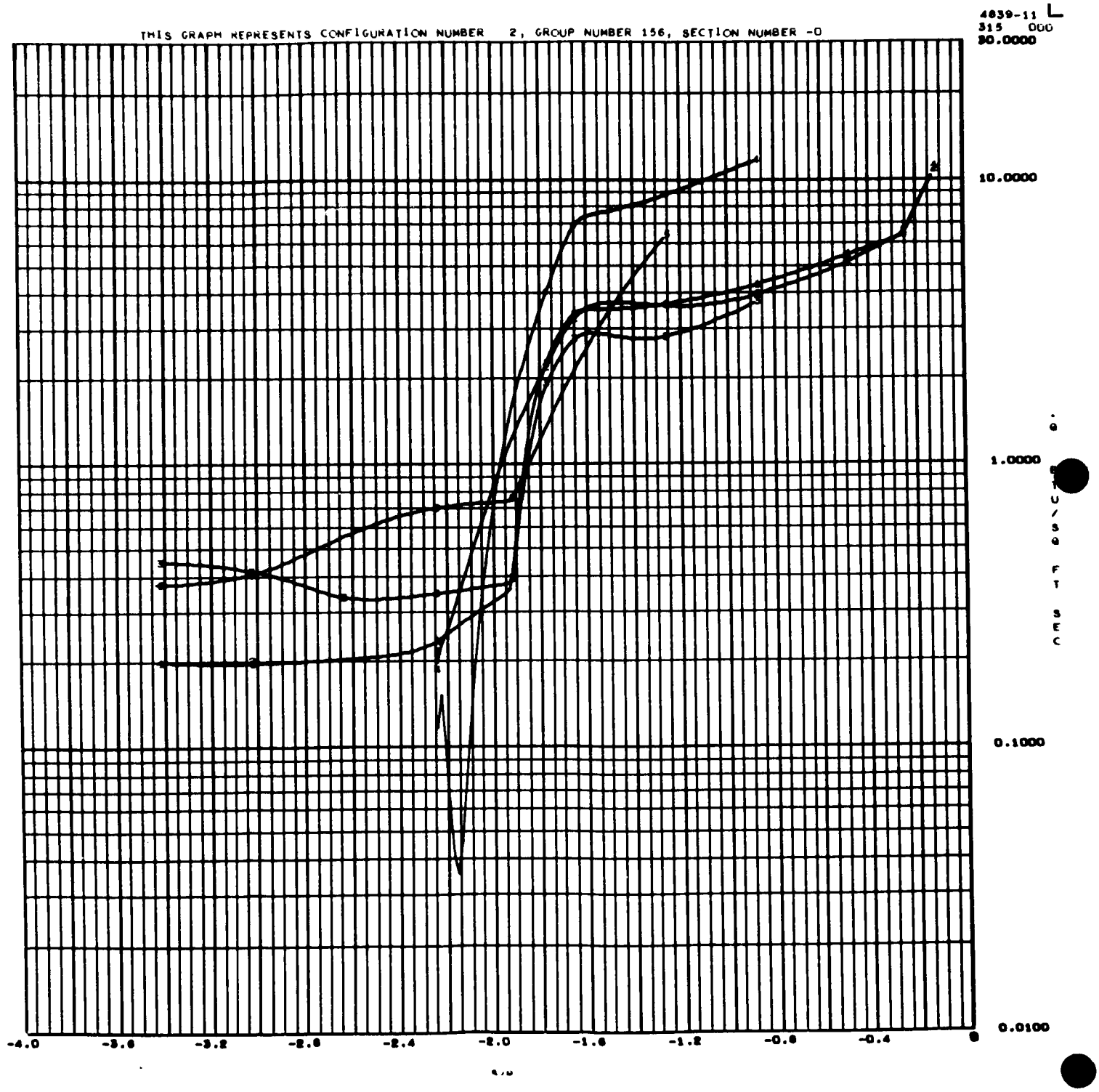
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 156
TOTAL PRESSURE 752.0 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1788.50 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

HEAT TRANSFER TEST

APOLLO

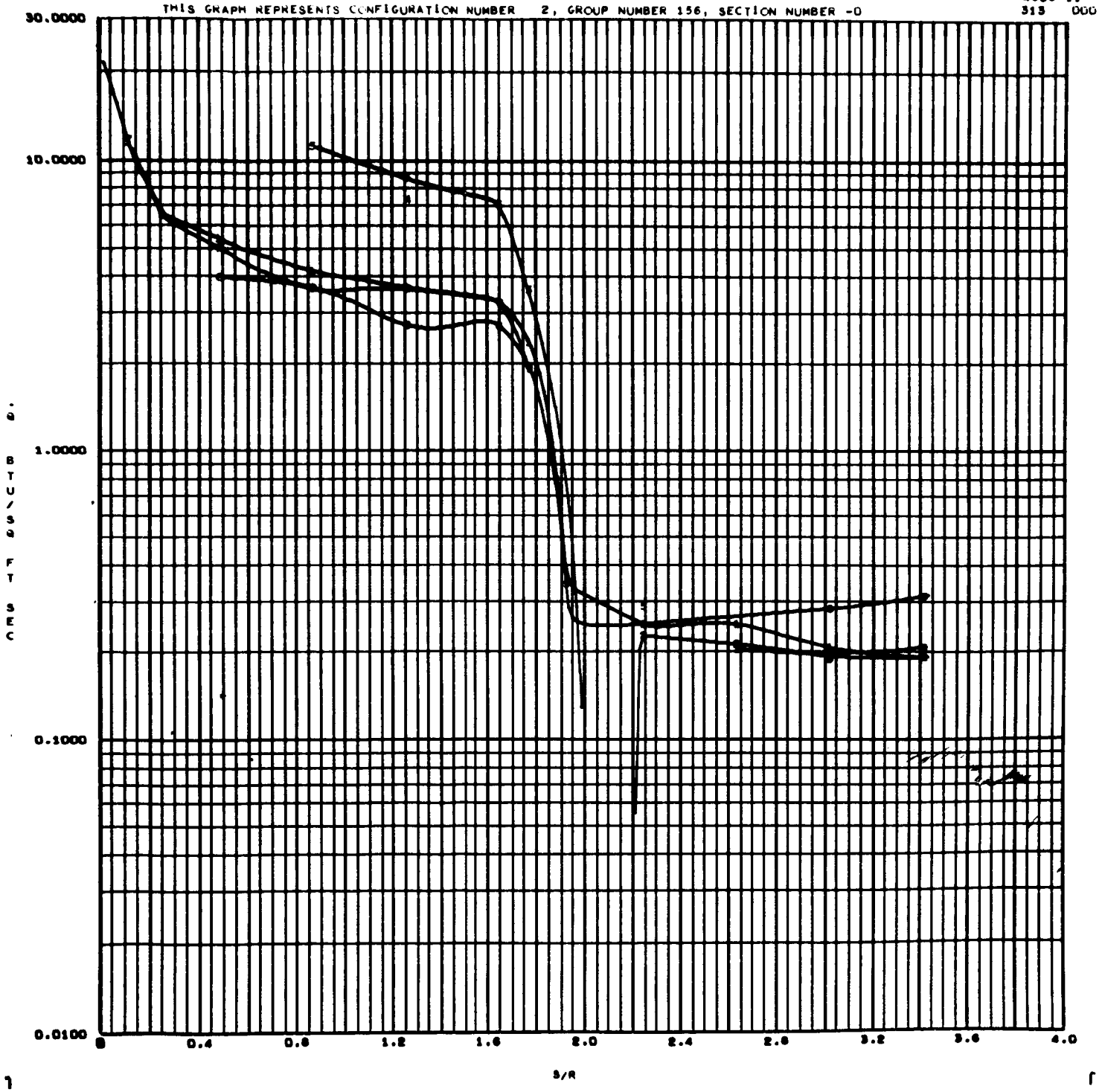
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 156
TOTAL PRESSURE 752.0 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1788.50 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11 L
313 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 156, SECTION NUMBER -0



[redacted]

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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 156
TOTAL PRESSURE 752.0 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_O^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1788.50 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

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[redacted]

HEAT TRANSFER TEST

APOLLO

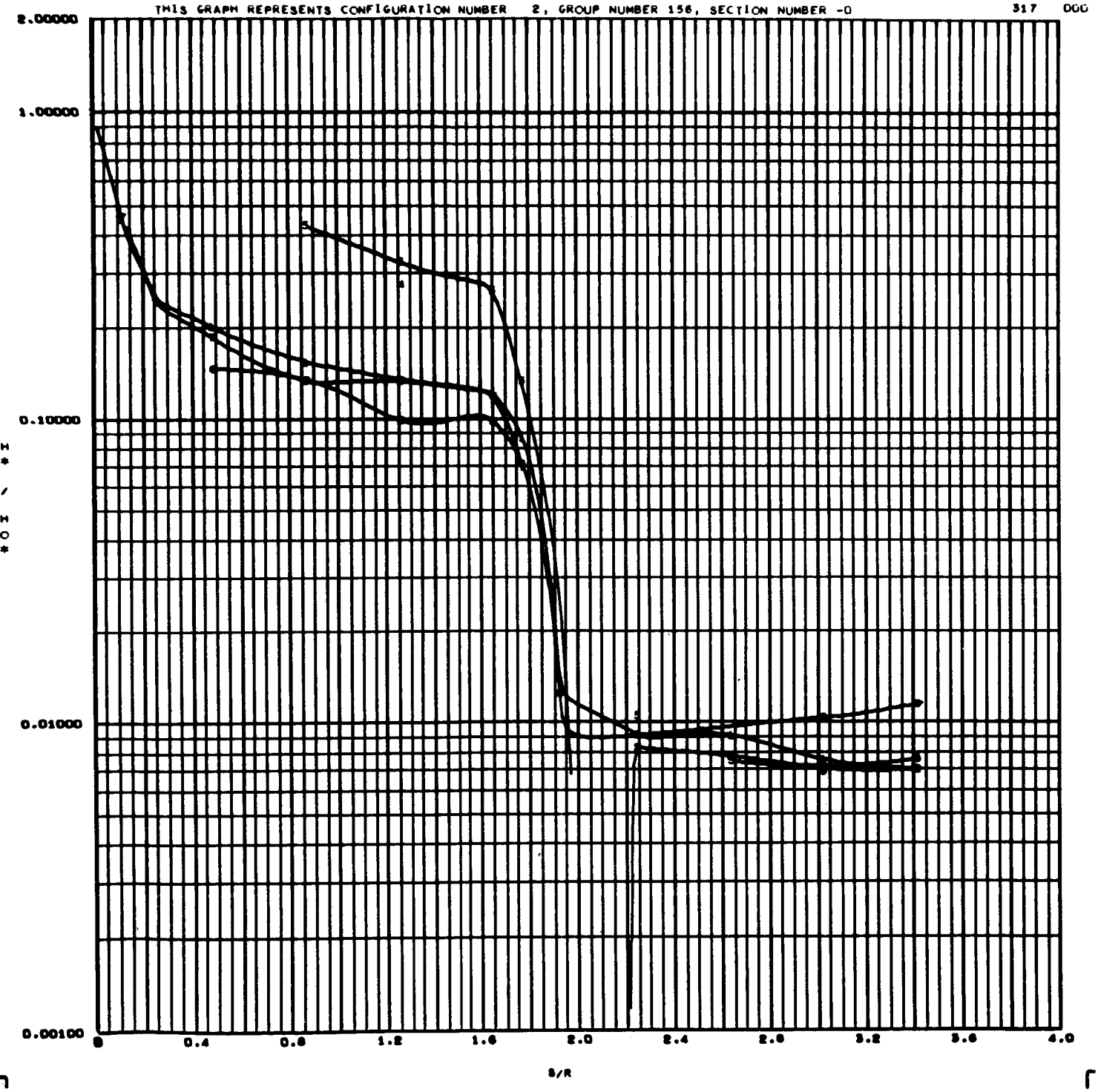
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 156
TOTAL PRESSURE 752.0 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1788.50 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
317 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 156, SECTION NUMBER -0



[redacted]

CONFIDENTIAL

HEAT TRANSFER TEST

APOLLO

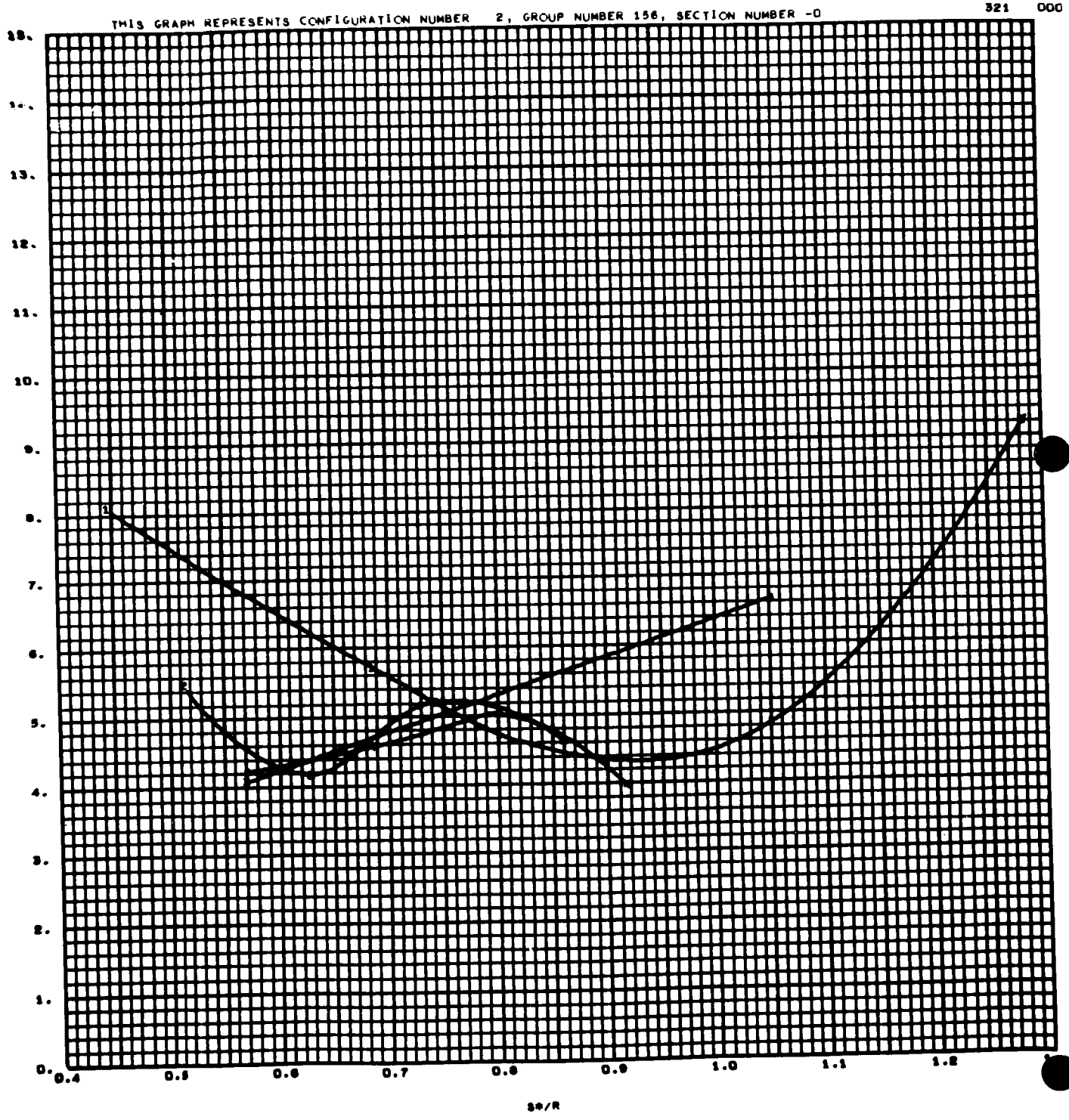
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 156
TOTAL PRESSURE 752.0 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1788.50 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
321 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 156, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

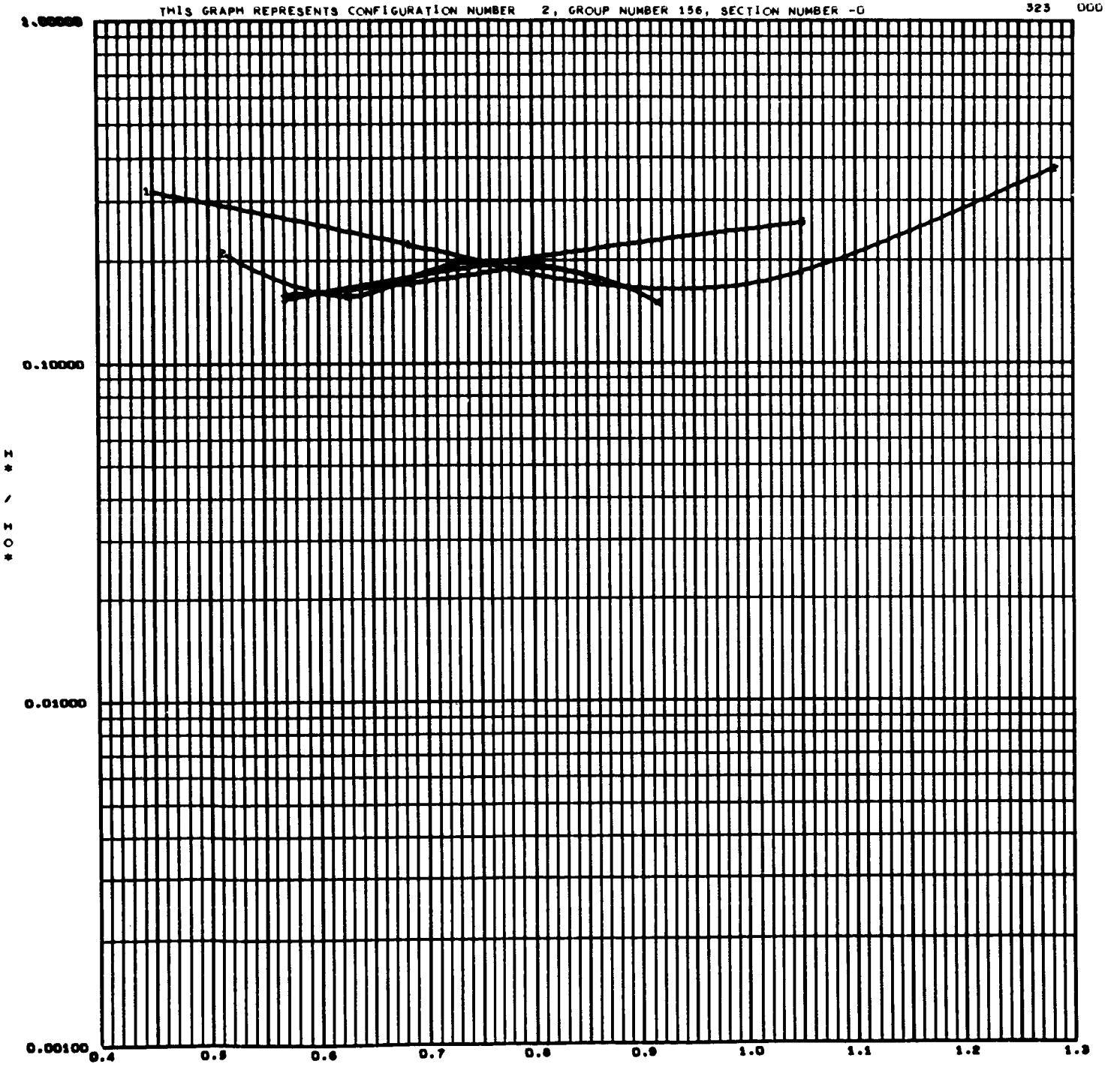
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 156
TOTAL PRESSURE 752.0 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1788.50 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-11
323 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 156, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

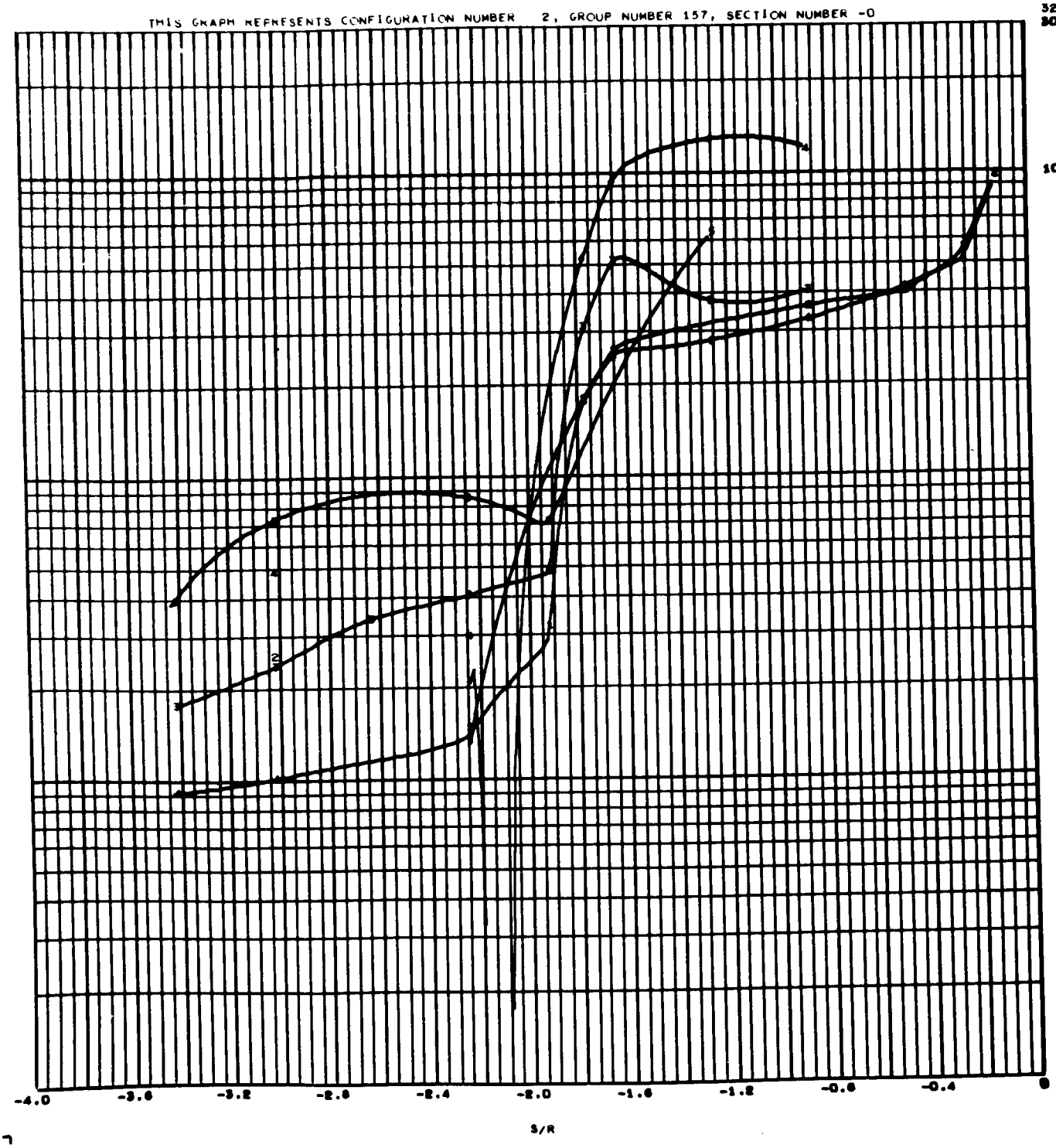
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 157
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11
327 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 157, SECTION NUMBER -0



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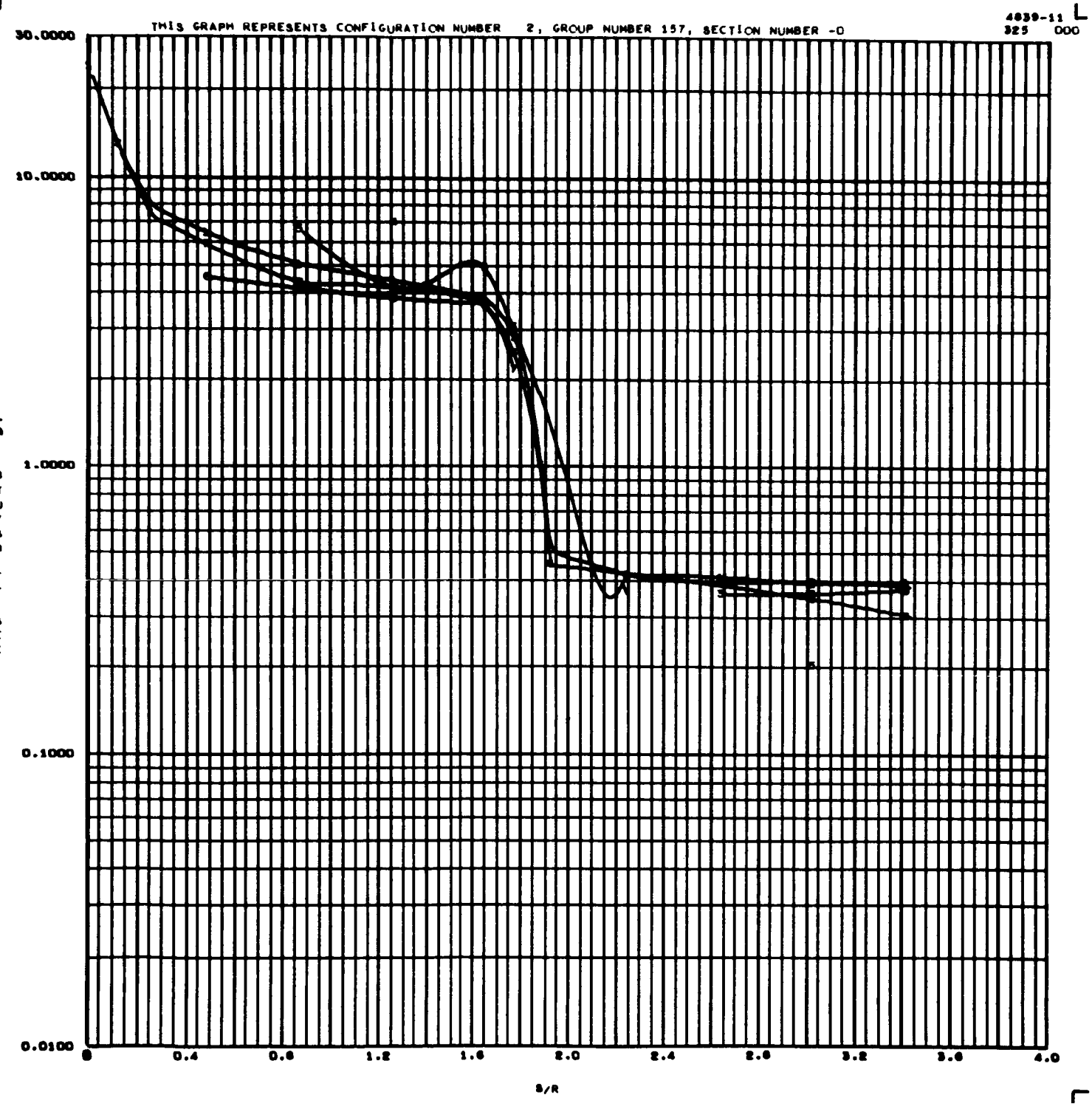
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 157
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

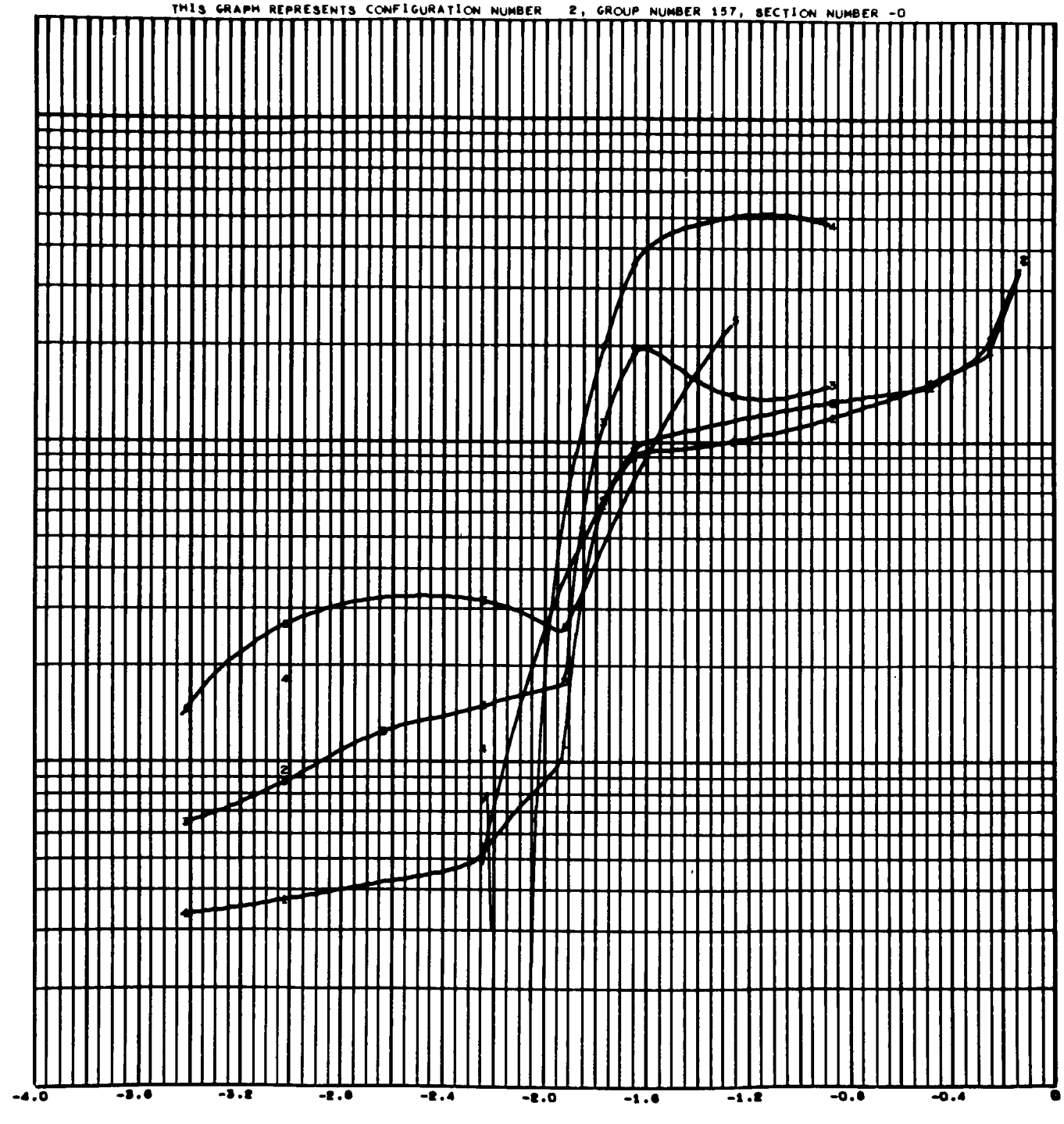
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 157
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0840 x 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 157, SECTION NUMBER -0

4839-11
331 000



[redacted]

HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 157
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1789.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4039-11
329 000

[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

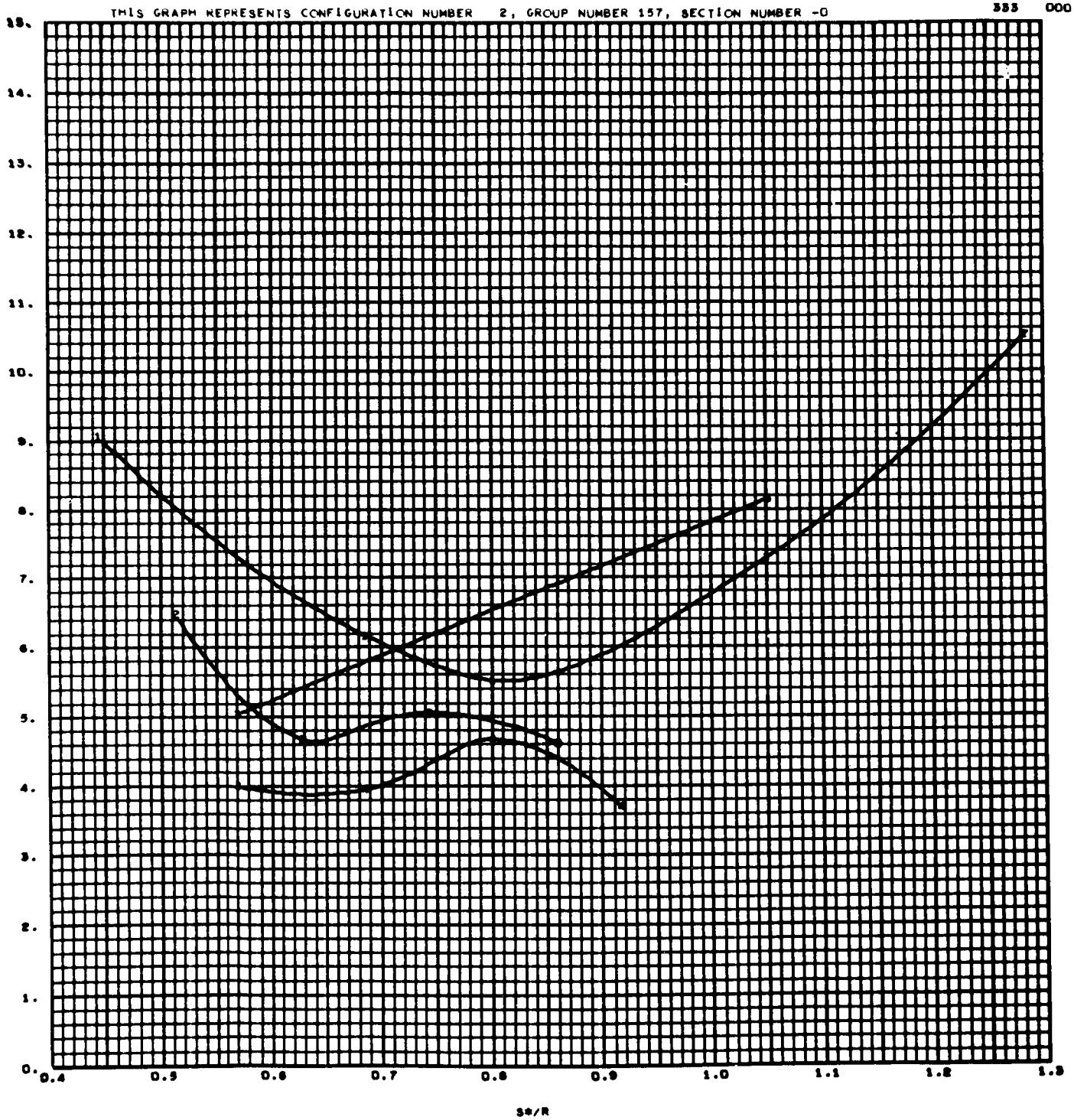
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 157
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
353 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 157, SECTION NUMBER -0



[redacted]

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HEAT TRANSFER TEST

APOLLO

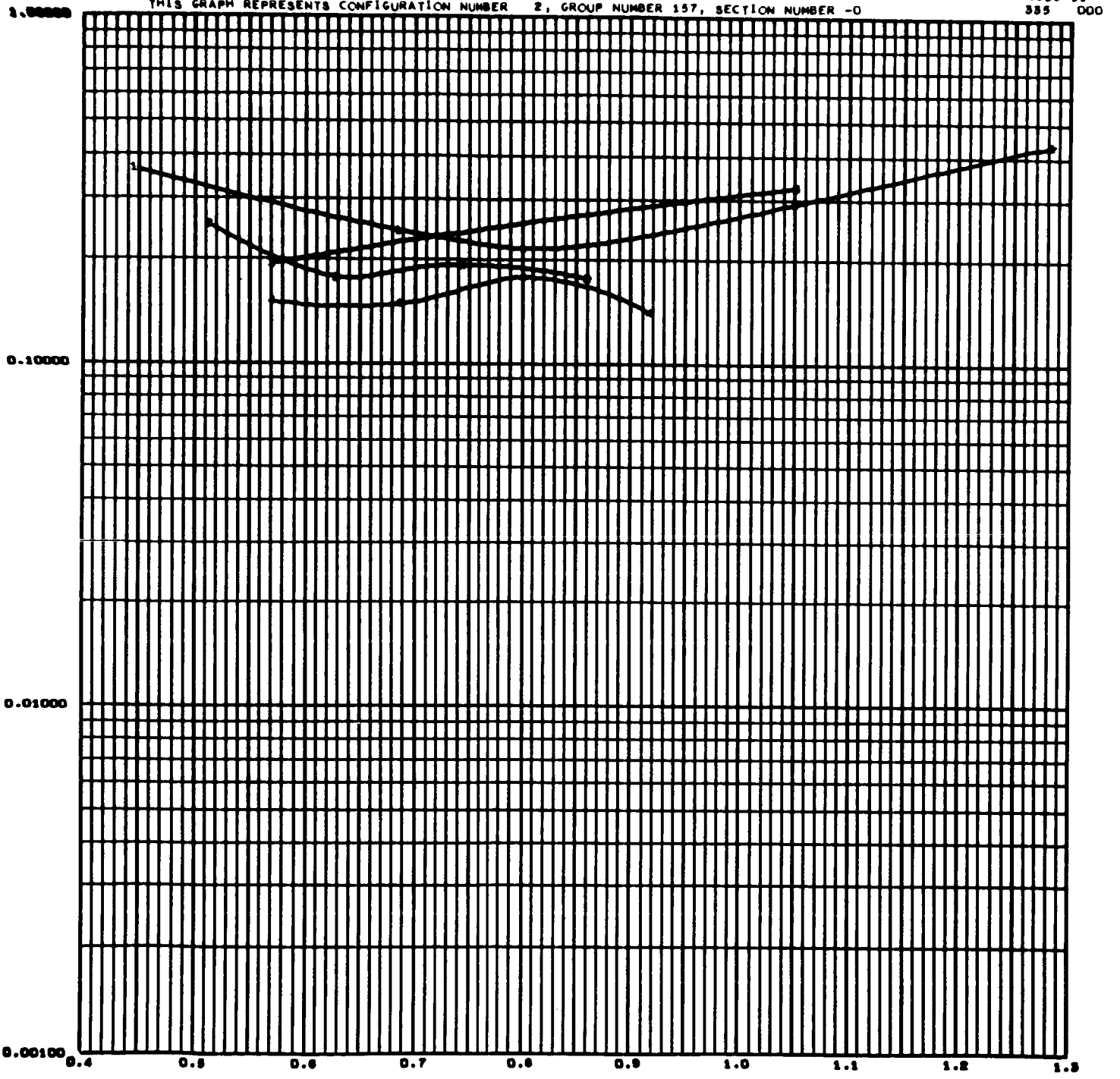
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 157
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_O^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1789.70 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 157, SECTION NUMBER -0

4839-11
335 000



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[redacted]

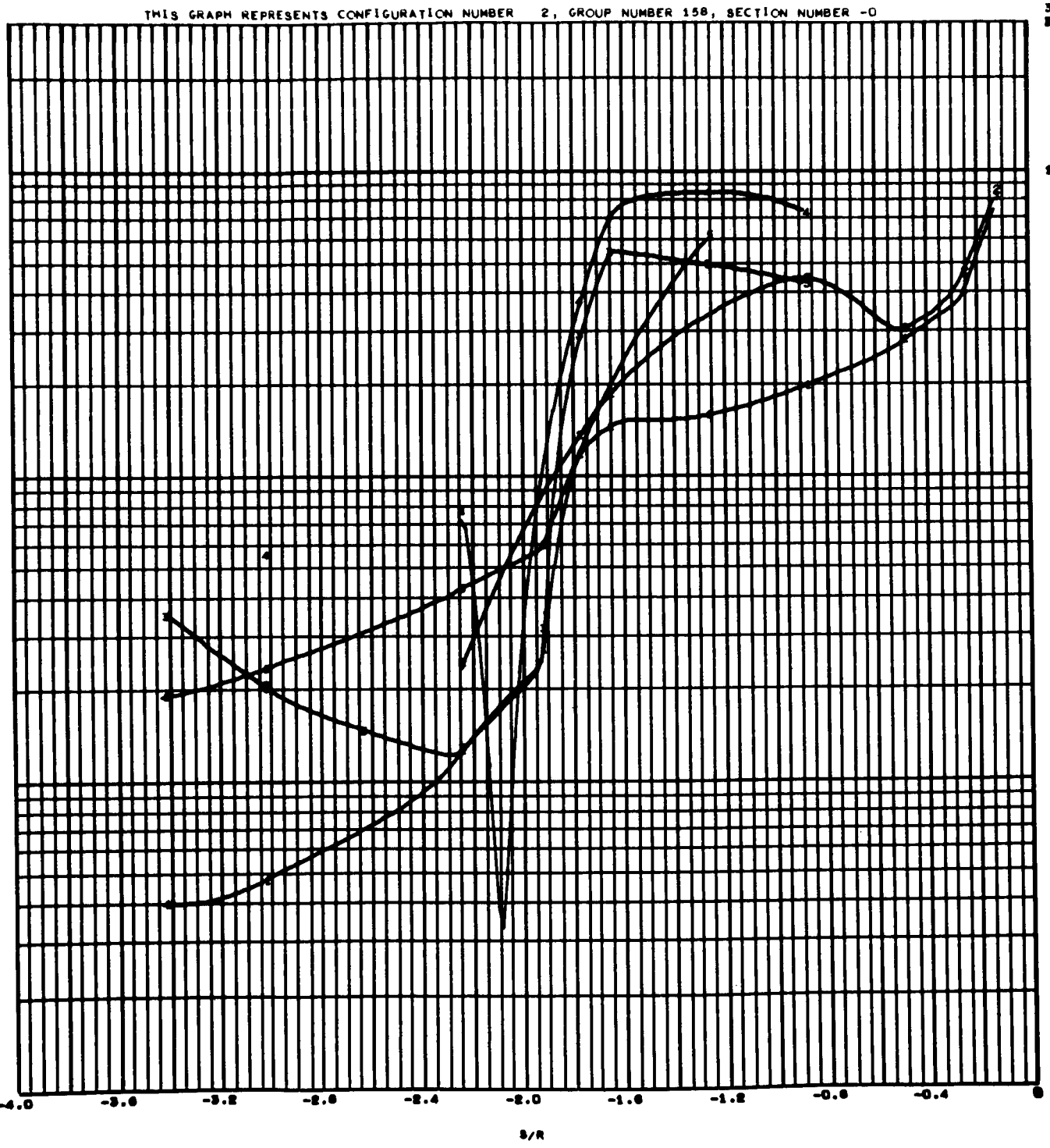
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 158
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.80 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

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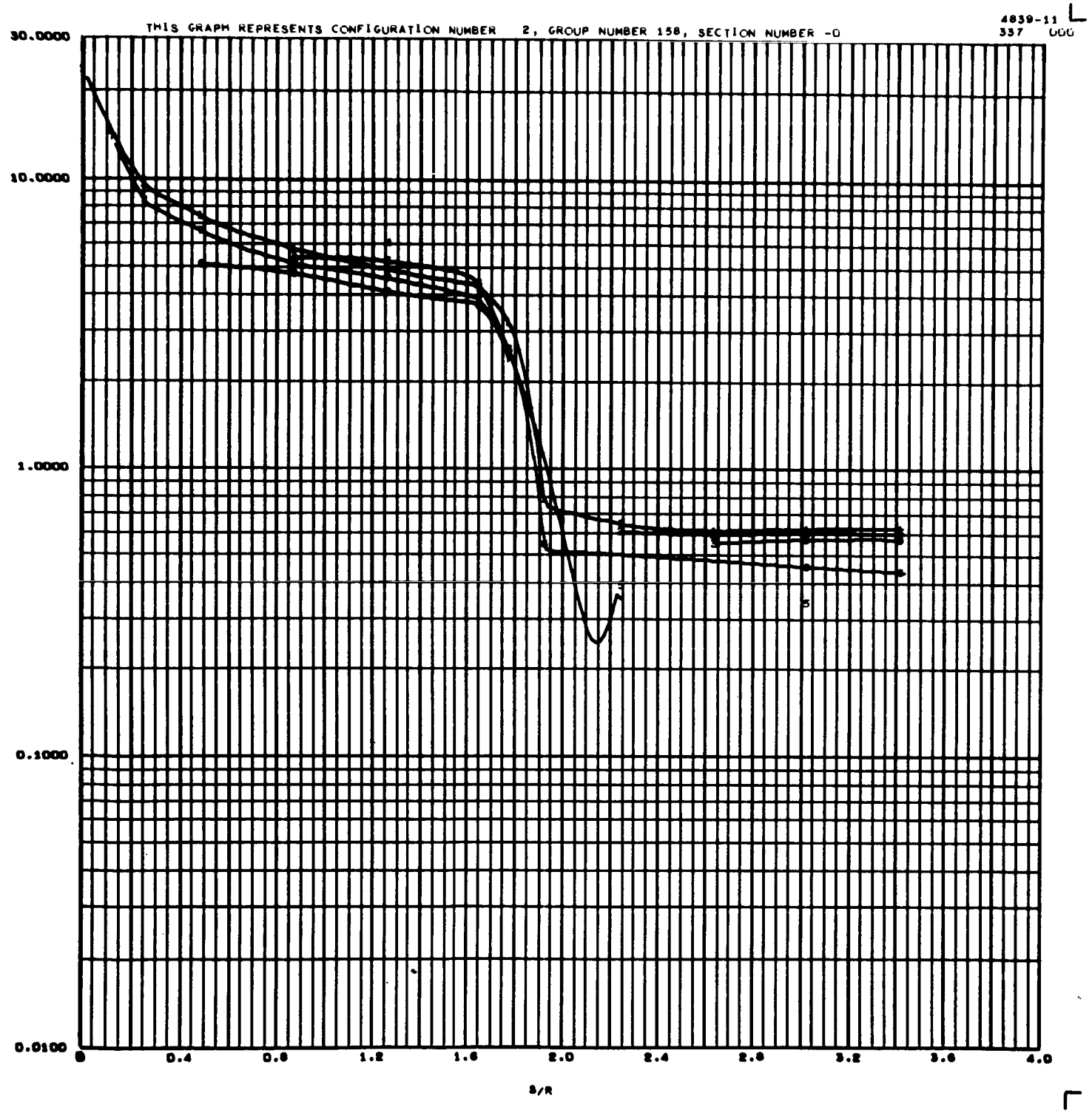
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 158
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.80 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

HEAT TRANSFER TEST

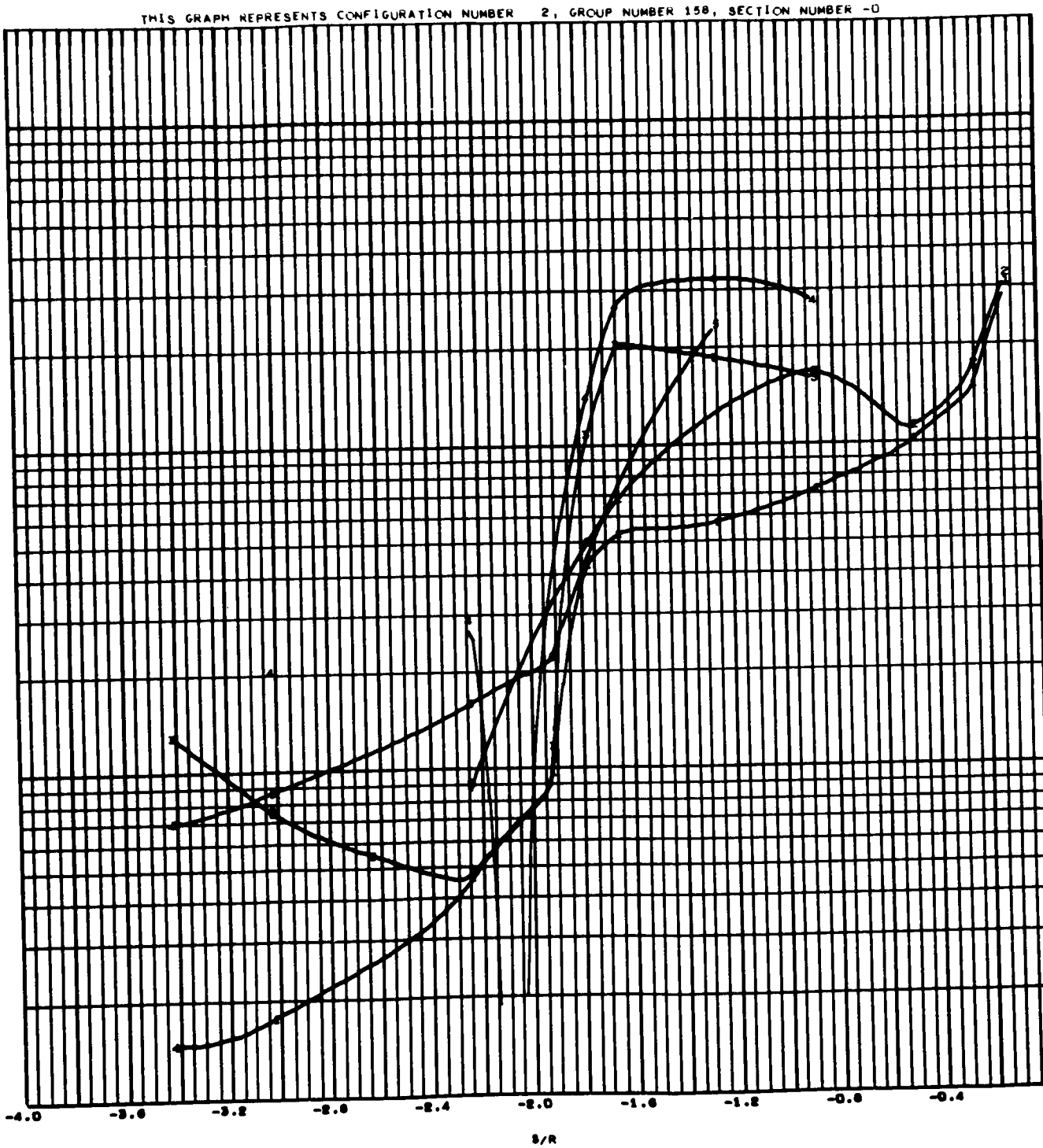
APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 158
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.80 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11
343 000



[redacted]

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HEAT TRANSFER TEST

APOLLO

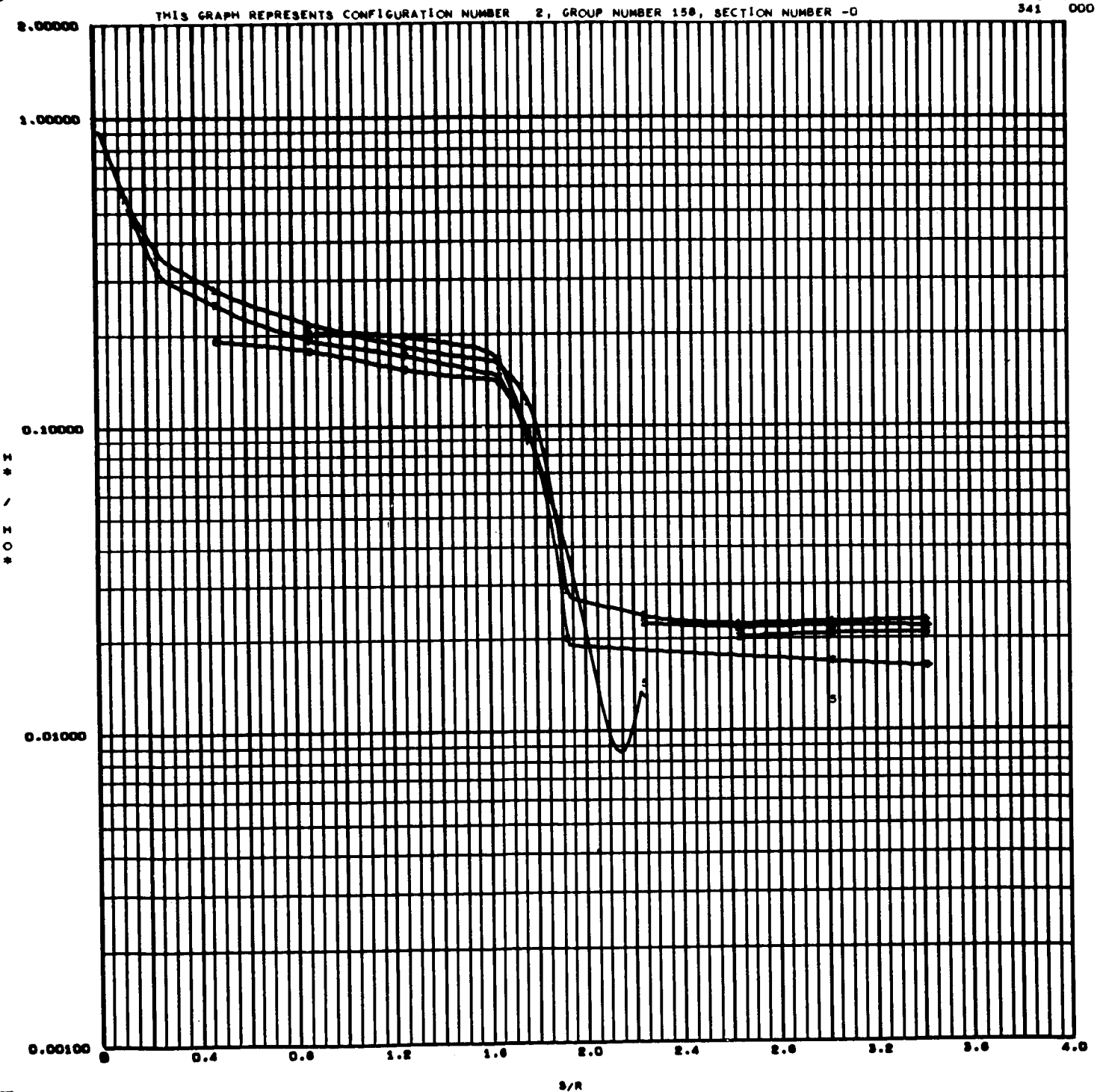
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 158
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.80 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
341 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 158, SECTION NUMBER -0



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[redacted]

HEAT TRANSFER TEST

APOLLO

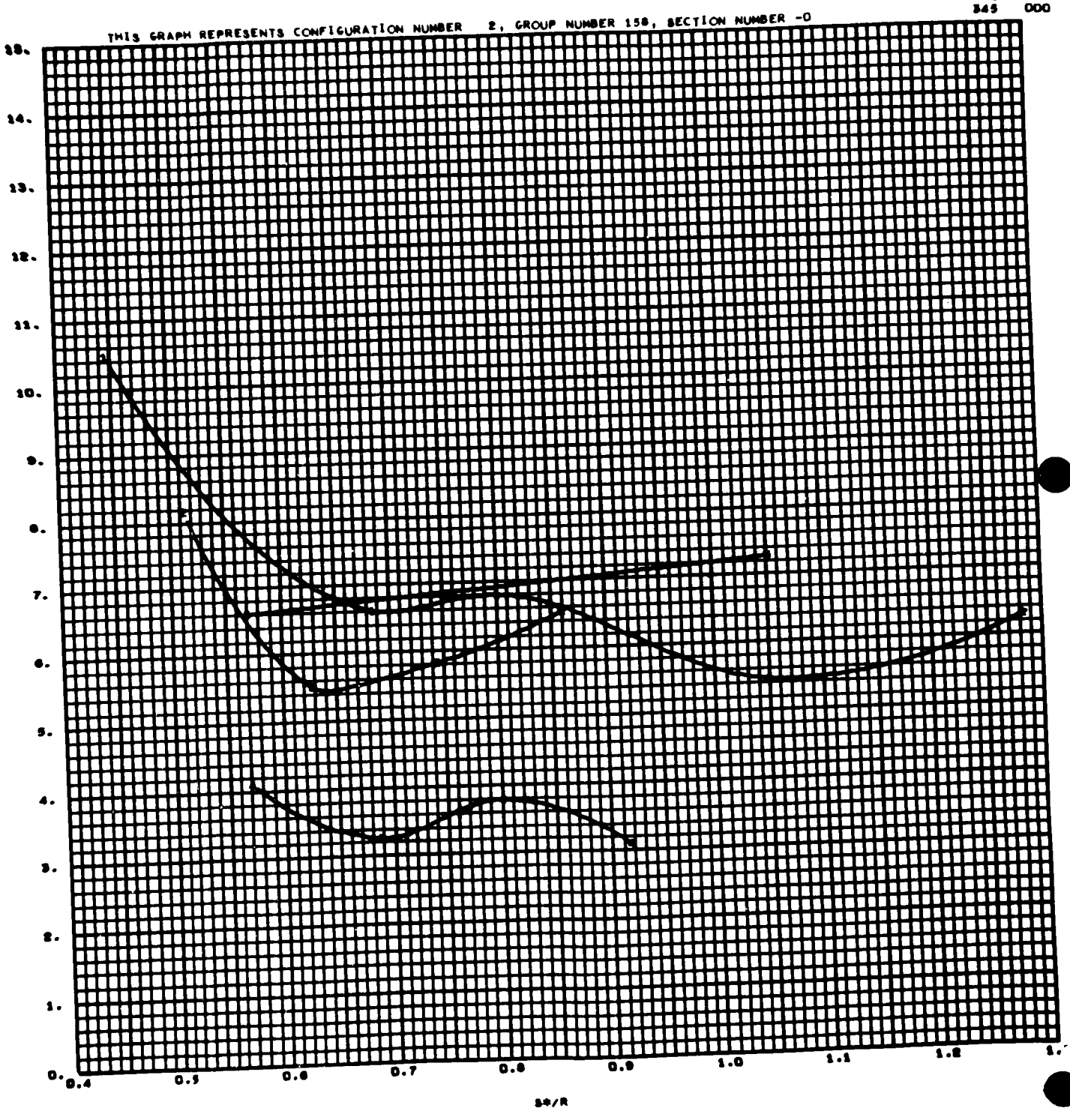
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 158
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.80 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
345 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 158, SECTION NUMBER -0



[redacted]

[redacted]

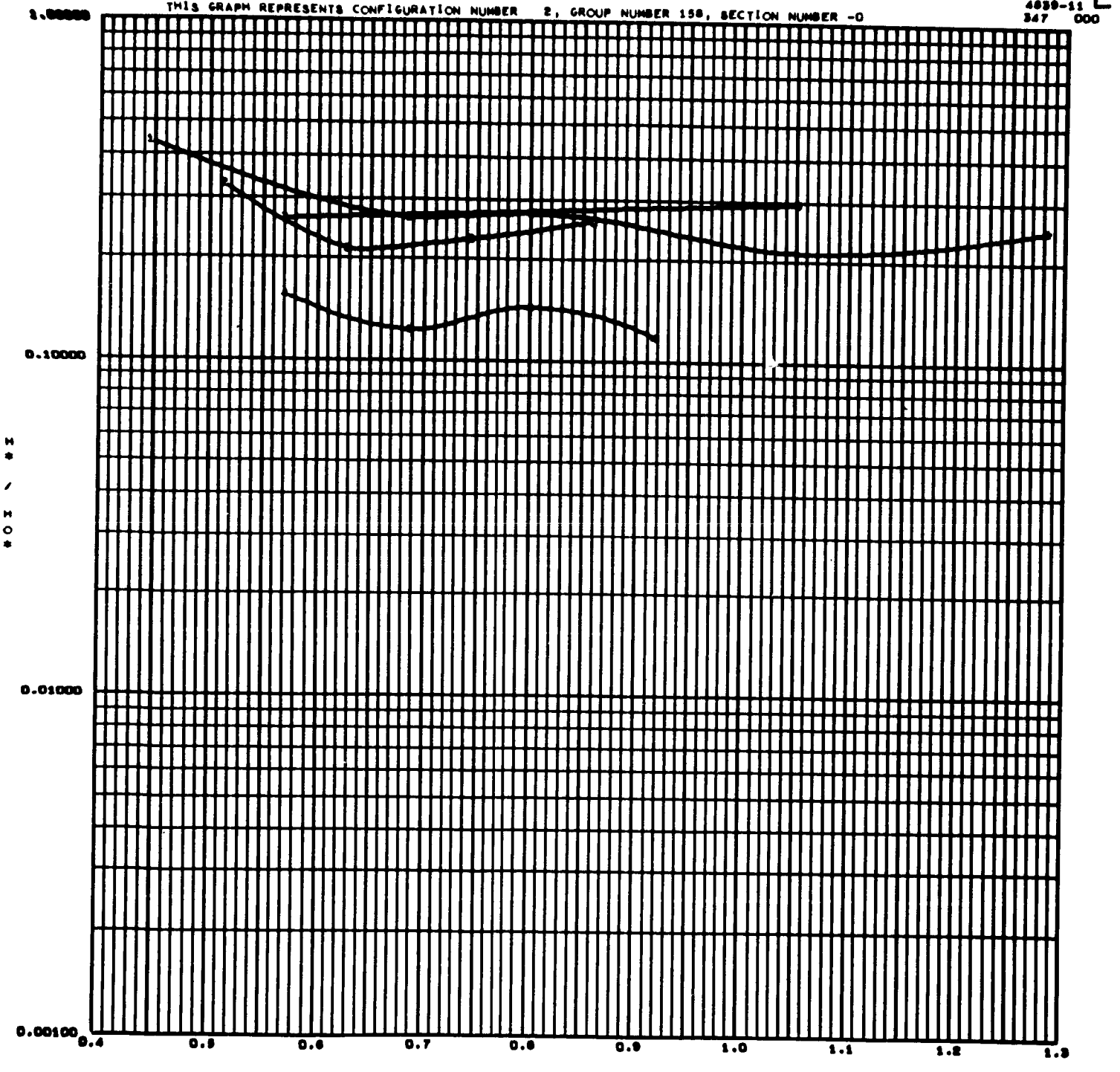
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 158
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.80 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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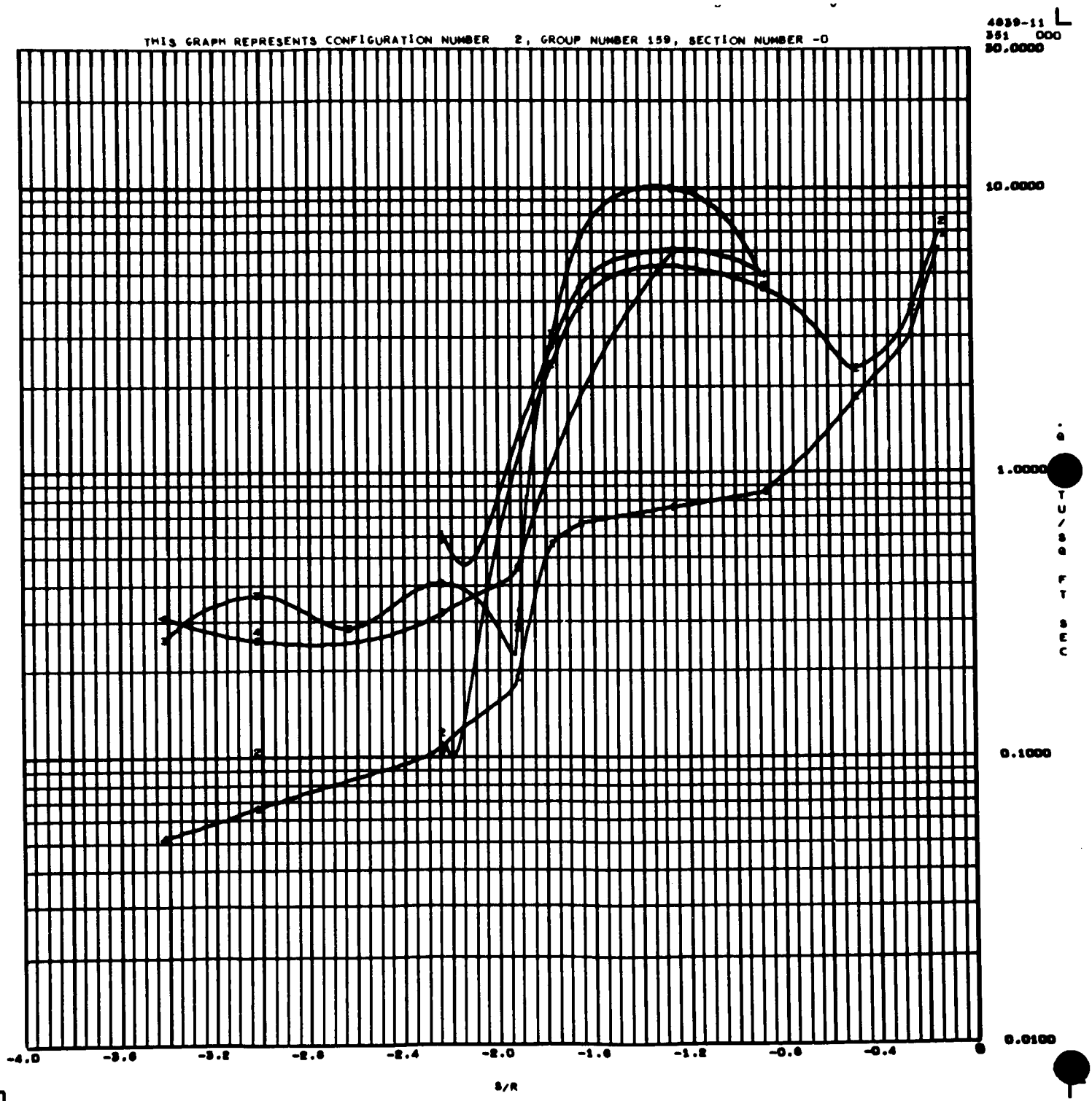
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 159
TOTAL PRESSURE 754.8 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

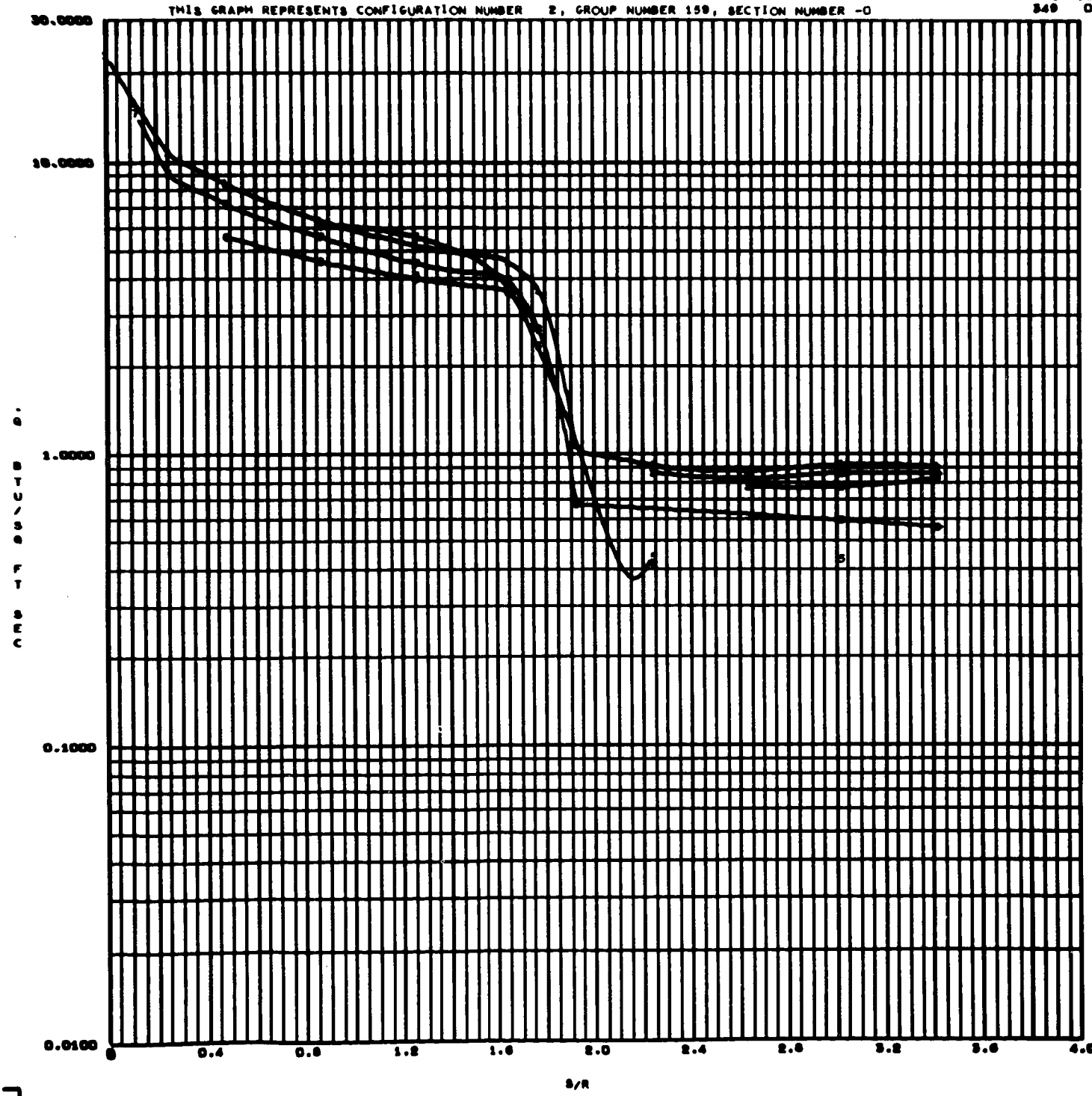
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 159
TOTAL PRESSURE 754.8 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11 349 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 159, SECTION NUMBER -0



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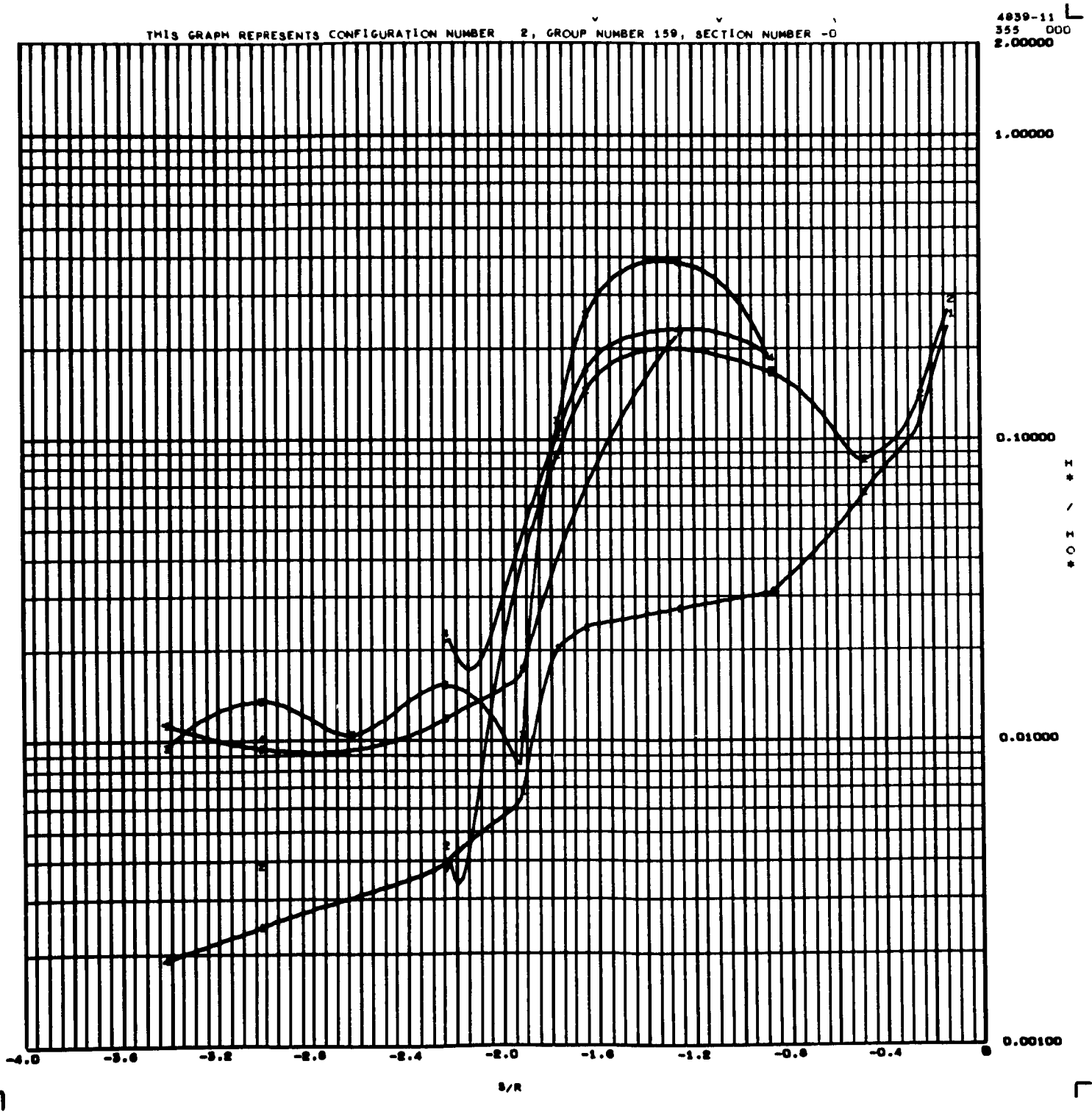
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 159
TOTAL PRESSURE 754.8 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

[redacted]

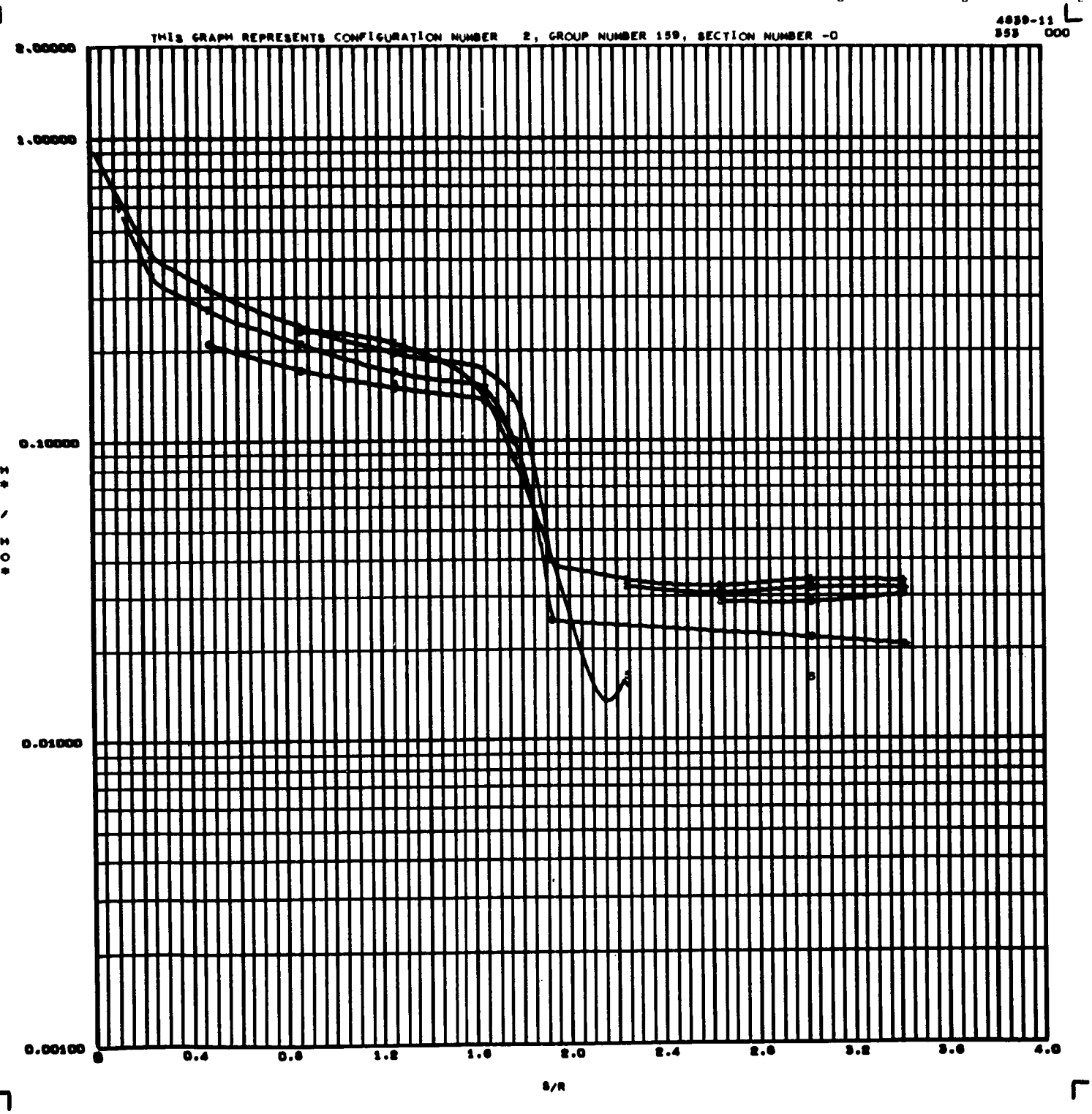
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 159
TOTAL PRESSURE 754.8 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1780.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

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HEAT TRANSFER TEST

APOLLO

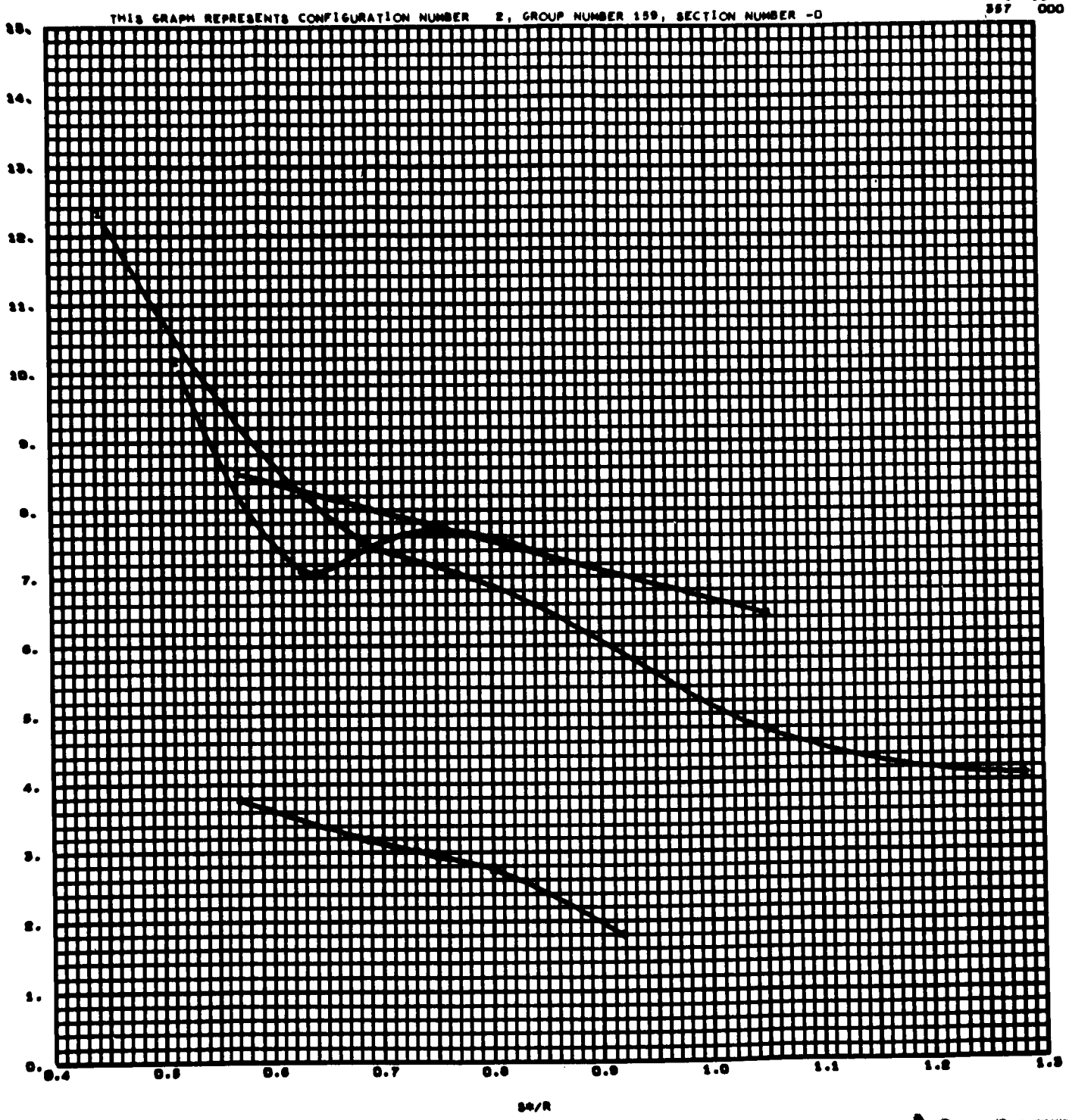
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 159
TOTAL PRESSURE 754.8 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1760.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4039-11
357 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 159, SECTION NUMBER -0



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~~CONFIDENTIAL~~

HEAT TRANSFER TEST

APOLLO

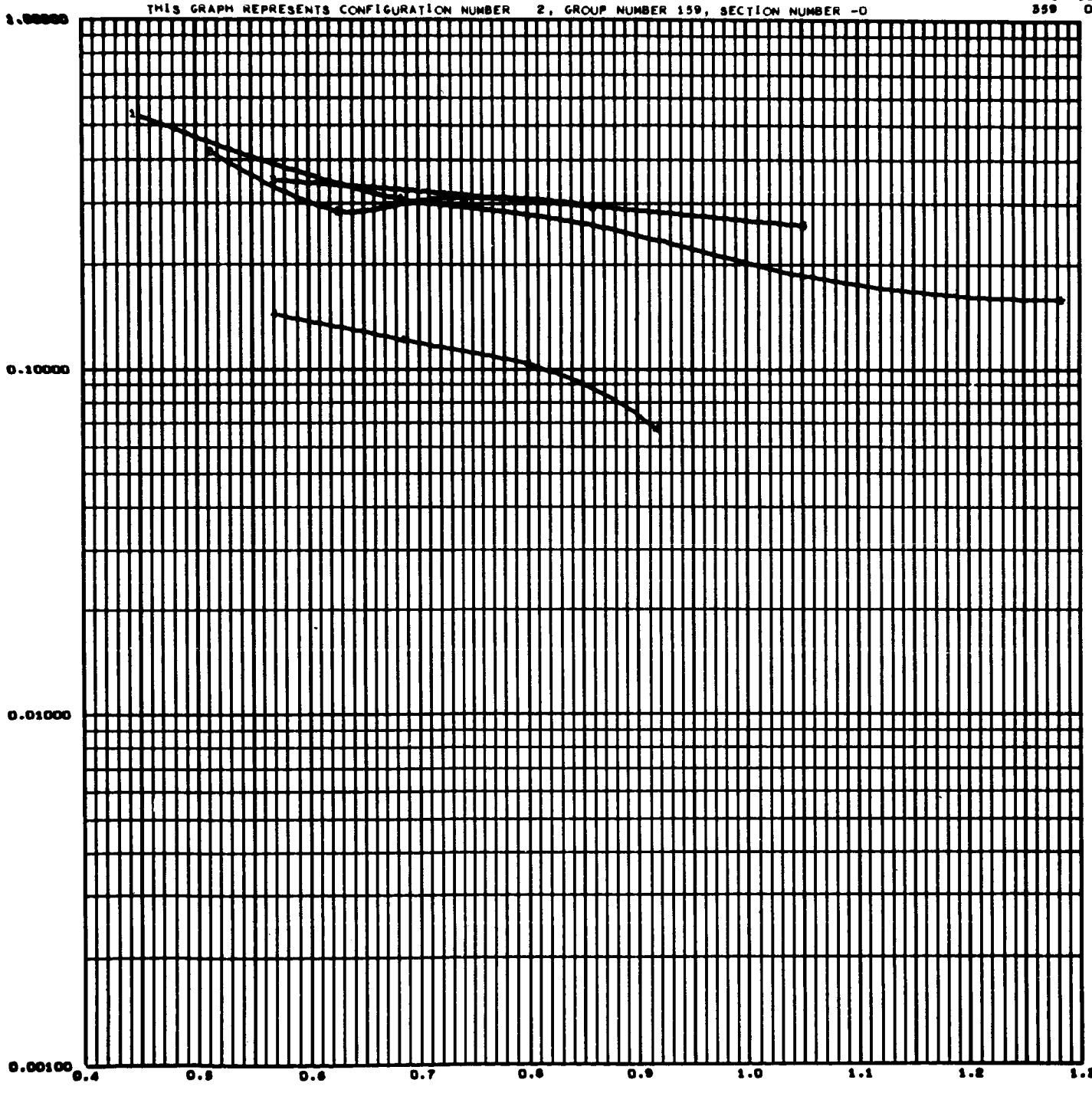
A E D C TUNNEL C

CONFIGURATION 2 MACH NO. 10.13
GROUP NO. 159
TOTAL PRESSURE 754.8 PSIA
REYNOLDS NUMBER PER INCH 0.0849 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1780.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4039-11
359 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 2, GROUP NUMBER 159, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

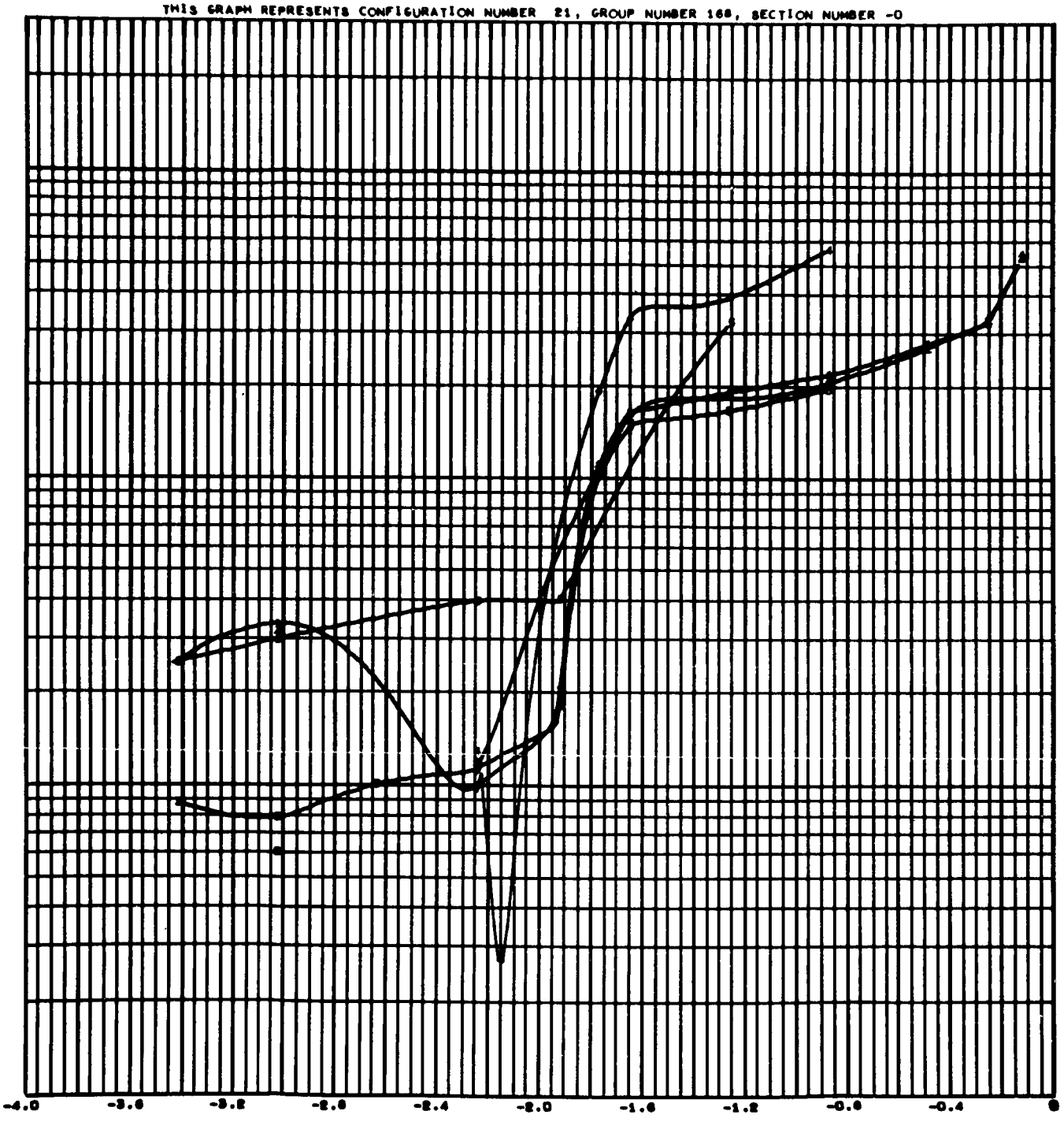
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.10
GROUP NO. 168
TOTAL PRESSURE 480.0 PSIA
REYNOLDS NUMBER PER INCH 0.0617 X 10^6
H_o * 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1655.10 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 168, SECTION NUMBER -0

4839-11
519 000



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HEAT TRANSFER TEST

APOLLO

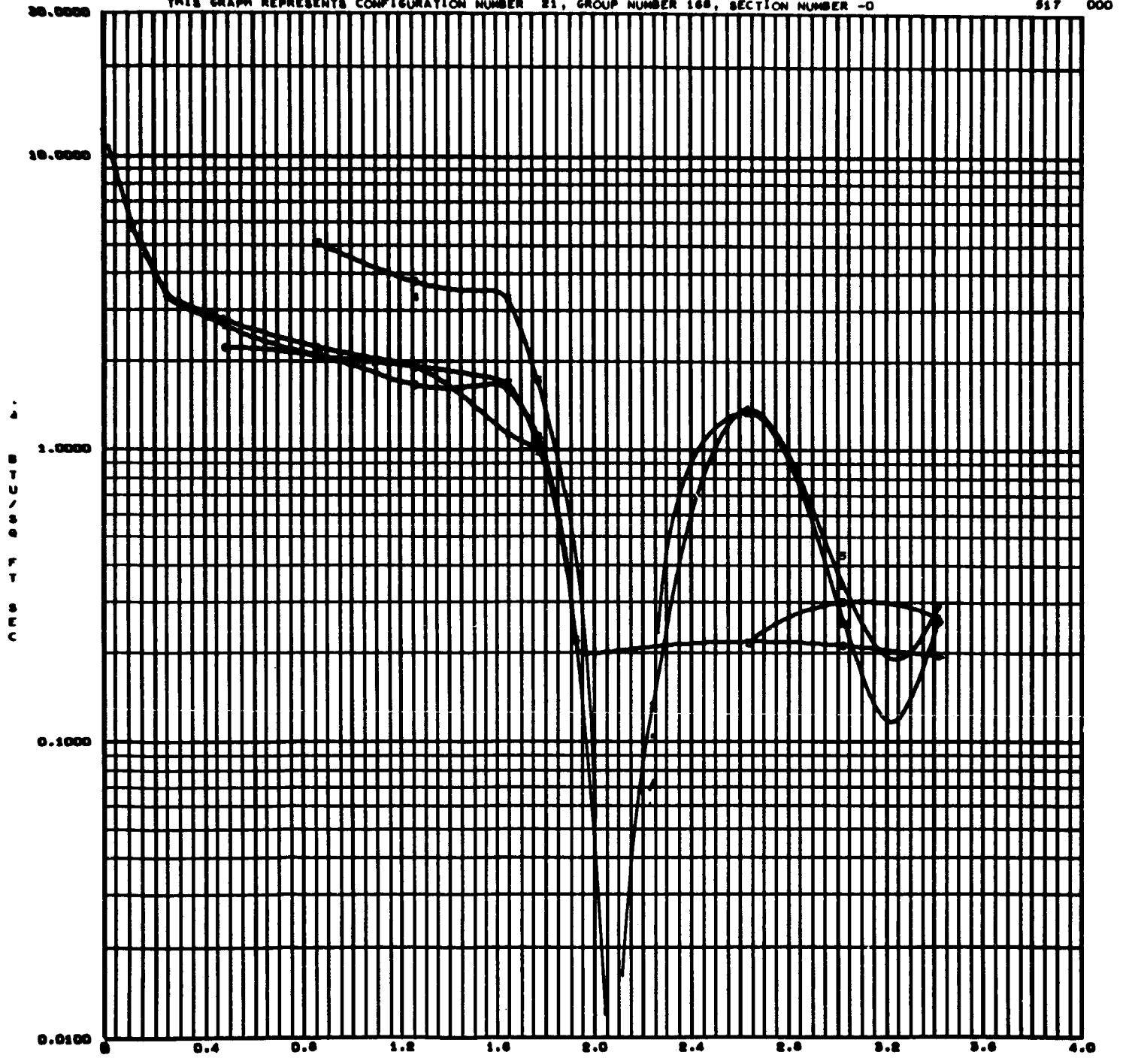
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.10
GROUP NO. 168
TOTAL PRESSURE 480.0 PSIA
REYNOLDS NUMBER PER INCH 0.0617 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1655.10 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 168, SECTION NUMBER -0

4039-11
517 000



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~~CONFIDENTIAL~~

HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.10
GROUP NO. 168
TOTAL PRESSURE 480.0 PSIA
REYNOLDS NUMBER PER INCH 0.0617 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1655.10 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 168, SECTION NUMBER -0

4639-11 L
523 000

2.00000
1.00000
0.10000
0.01000
0.00100

H_O^*

-4.0 -3.6 -3.2 -2.8 -2.4 -2.0 -1.6 -1.2 -0.8 -0.4 0

[redacted]

HEAT TRANSFER TEST

APOLLO

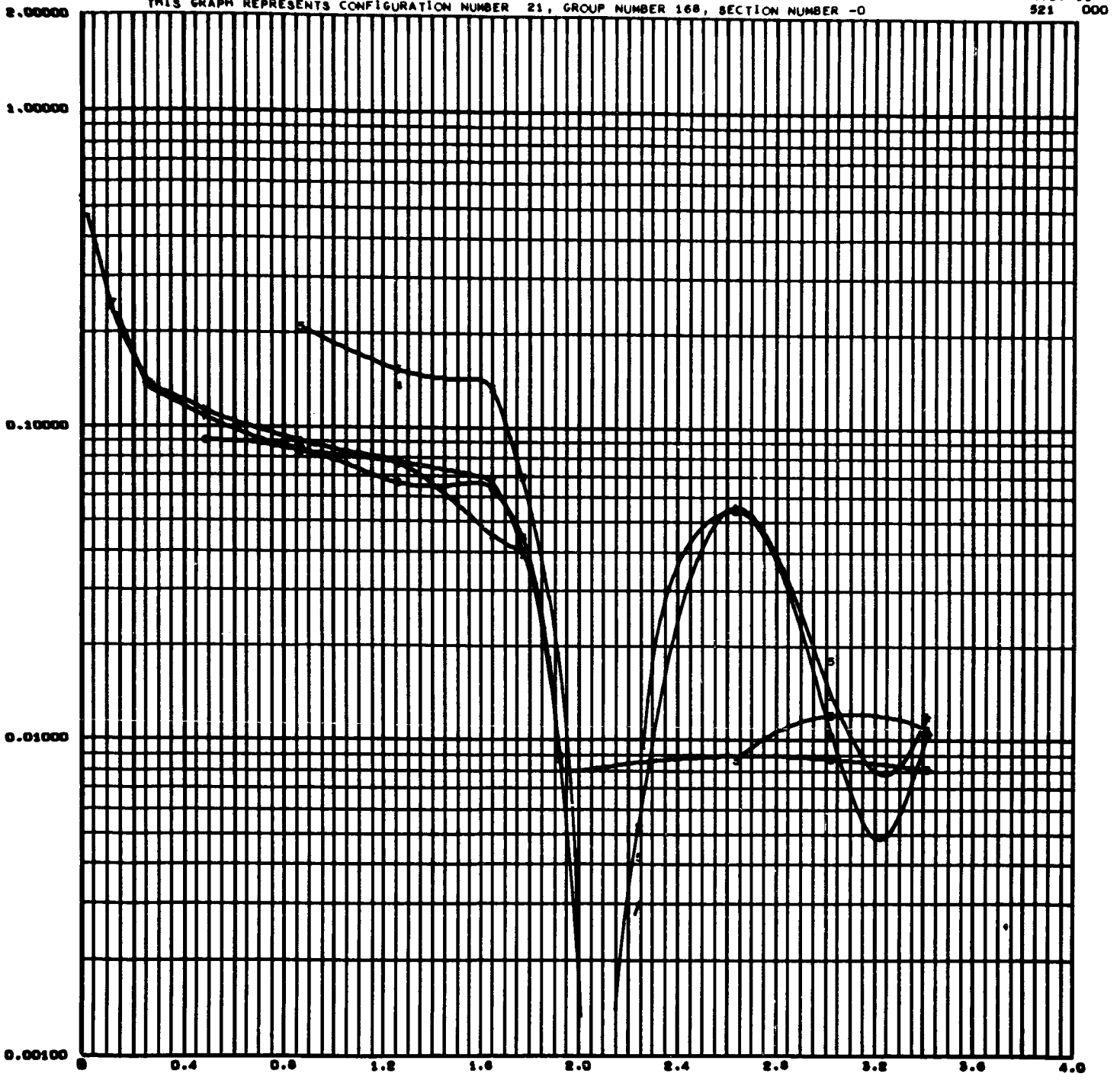
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.10
GROUP NO. 168
TOTAL PRESSURE 480.0 PSIA
REYNOLDS NUMBER PER INCH 0.0617 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1655.10 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
521 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 168, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

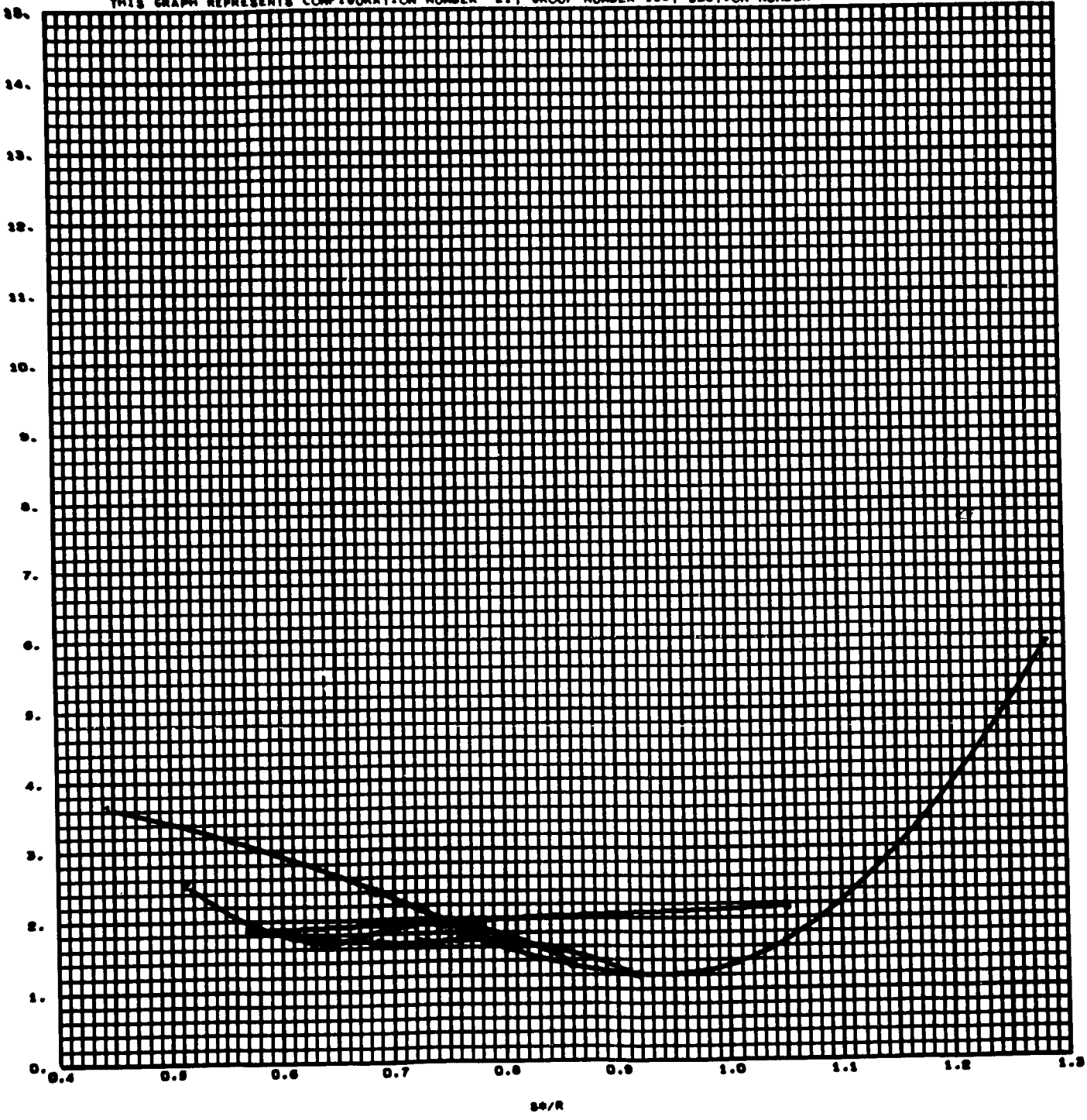
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.10
GROUP NO. 168
TOTAL PRESSURE 480.0 PSIA
REYNOLDS NUMBER PER INCH 0.0617 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1655.10 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4020-11 L
525 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 168, SECTION NUMBER -0



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[redacted]

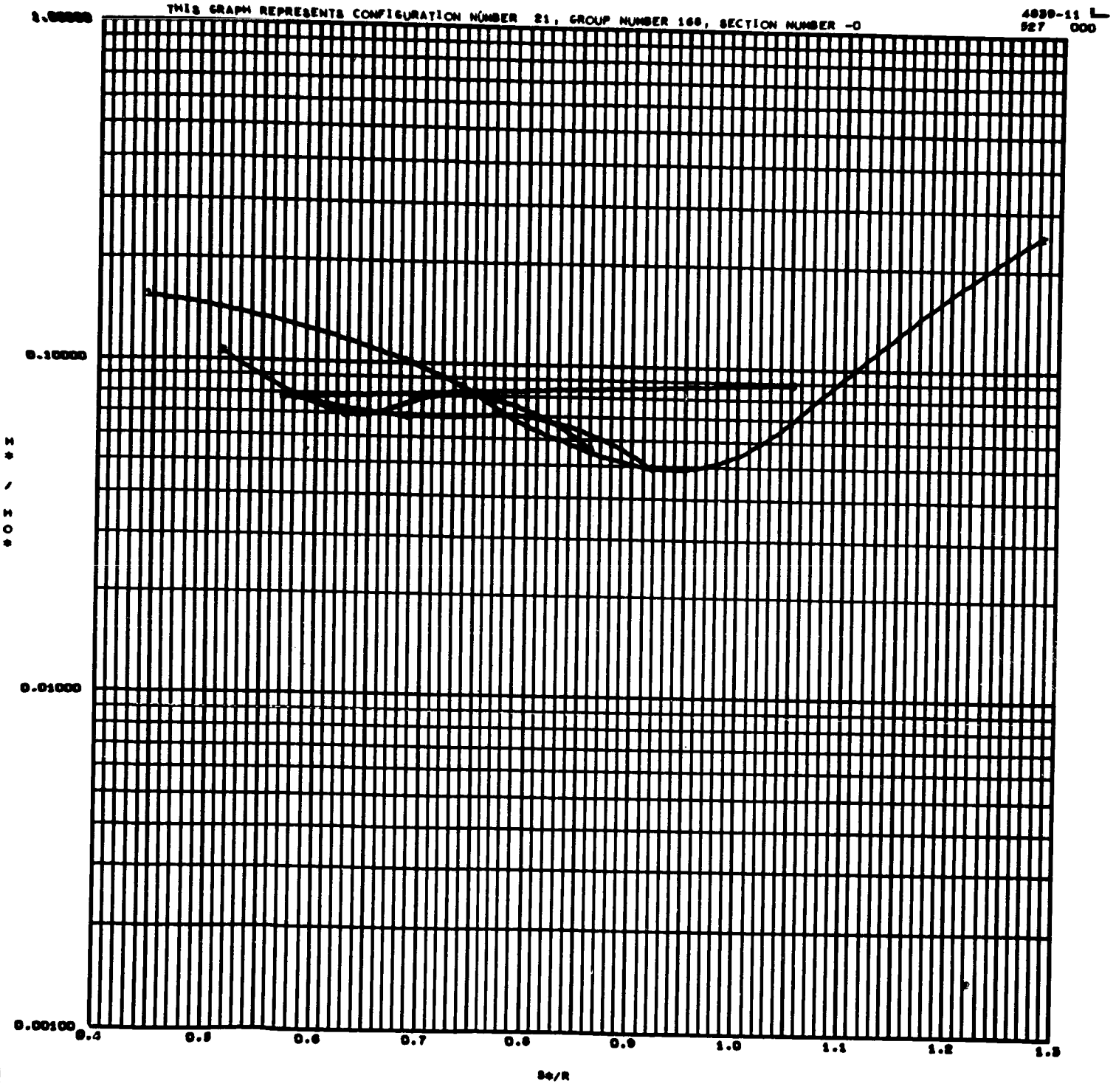
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.10
GROUP NO. 168
TOTAL PRESSURE 480.0 PSIA
REYNOLDS NUMBER PER INCH 0.0617 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1655.10 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

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HEAT TRANSFER TEST

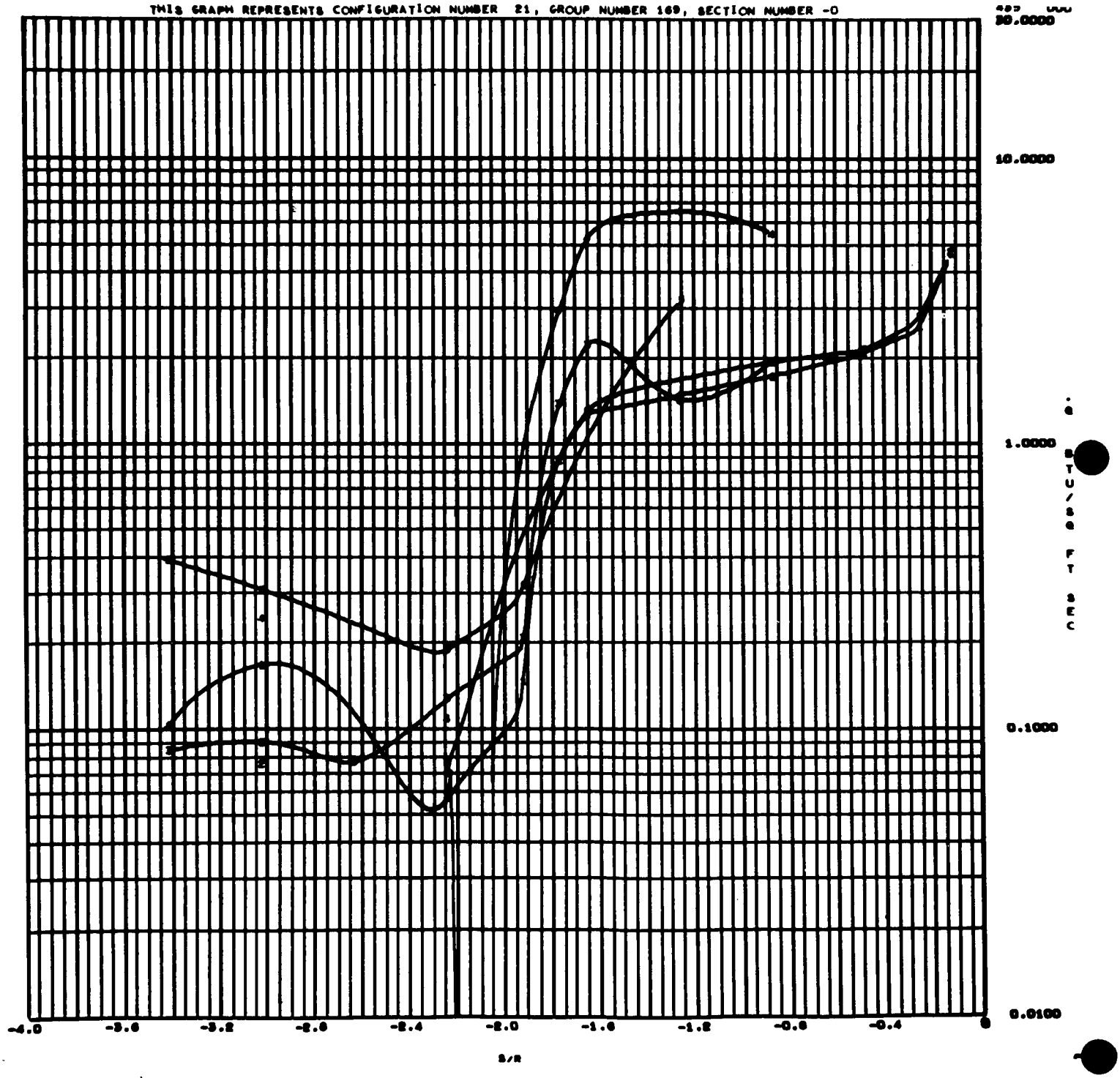
APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 169
TOTAL PRESSURE 216.8 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1650.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 169, SECTION NUMBER -0



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[redacted]

HEAT TRANSFER TEST

APOLLO

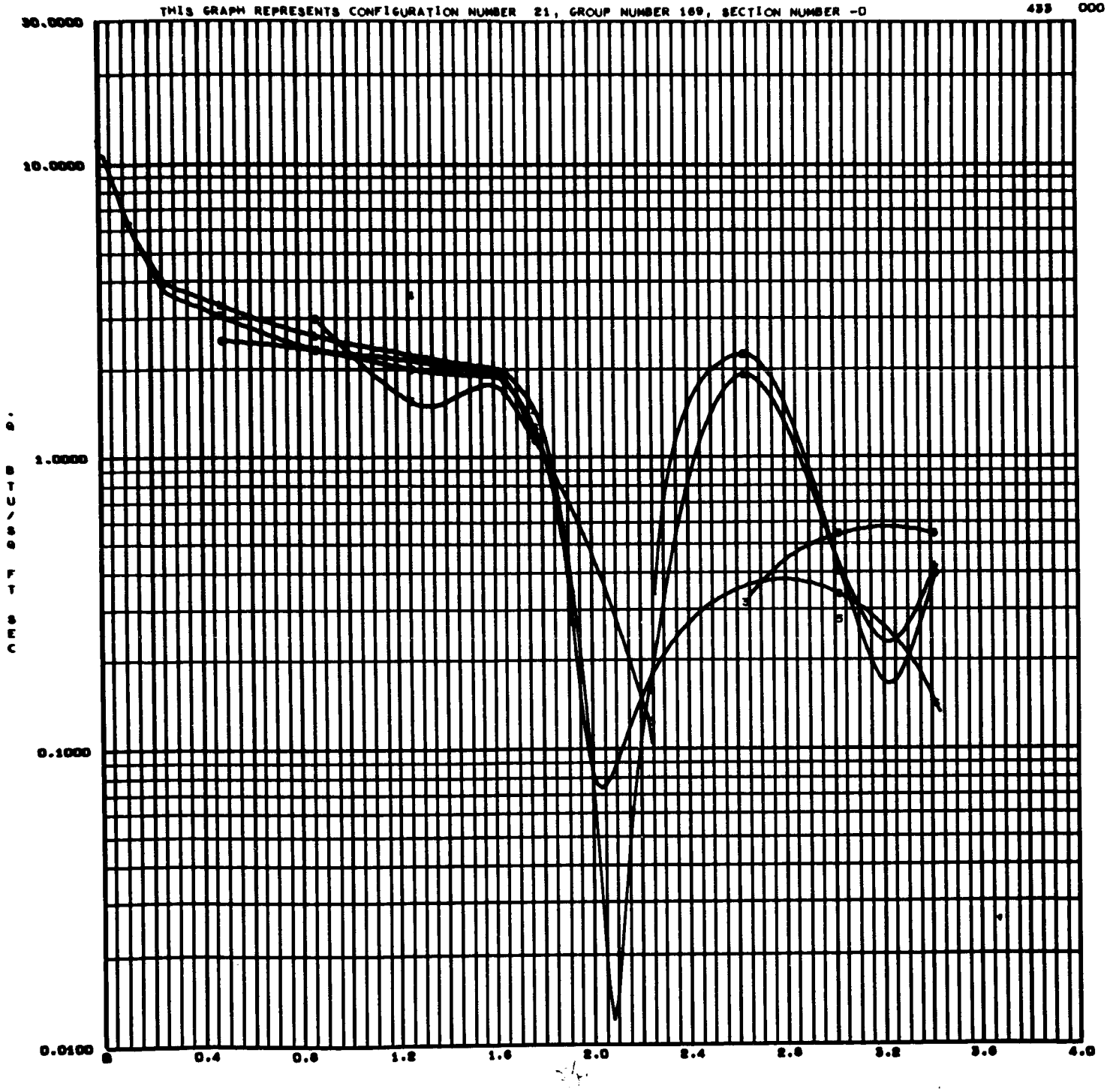
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 169
TOTAL PRESSURE 216.8 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1650.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
433 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 169, SECTION NUMBER -0



[redacted]

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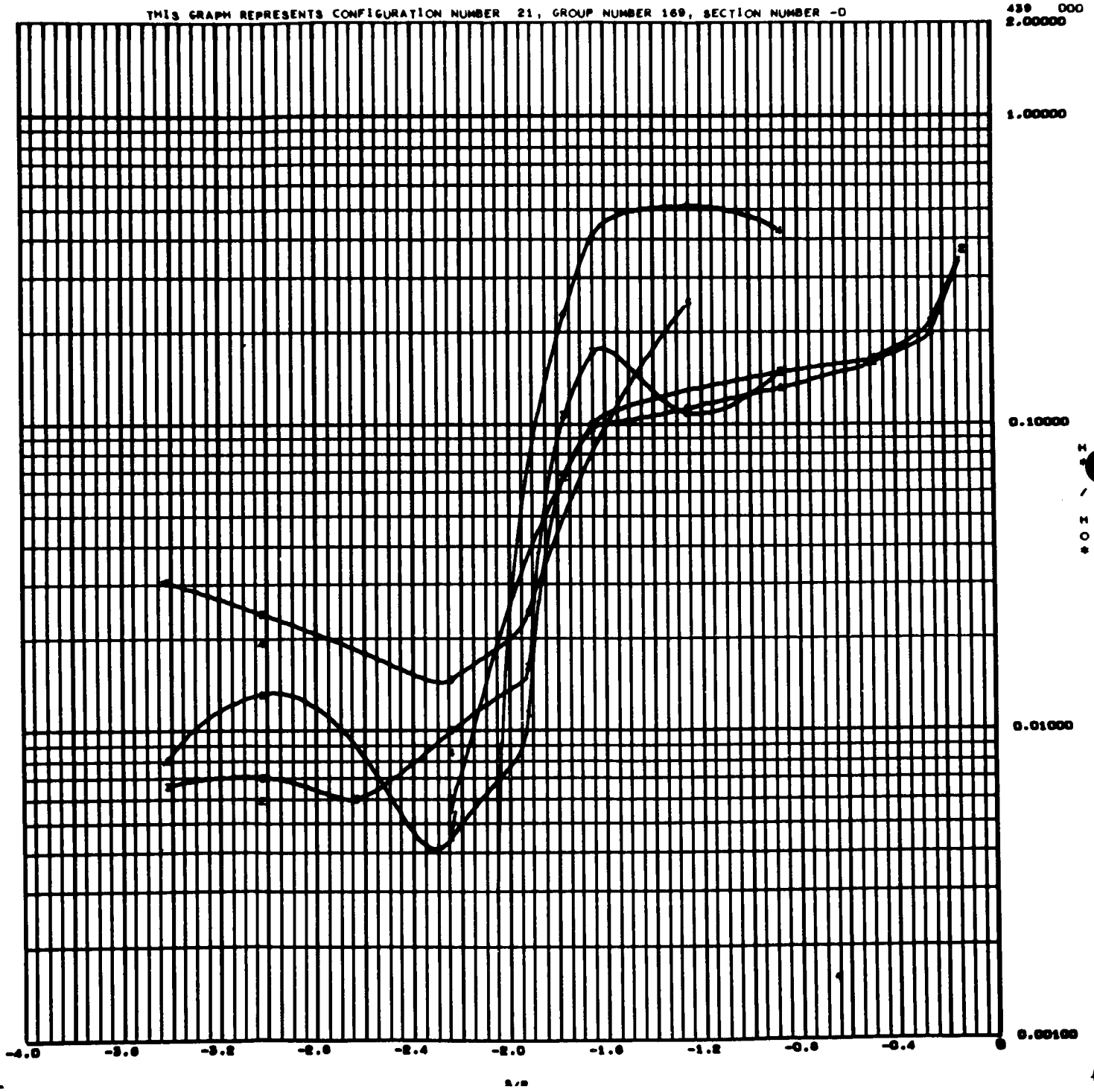
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 169
TOTAL PRESSURE 216.8 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1650.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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[redacted]

HEAT TRANSFER TEST

APOLLO

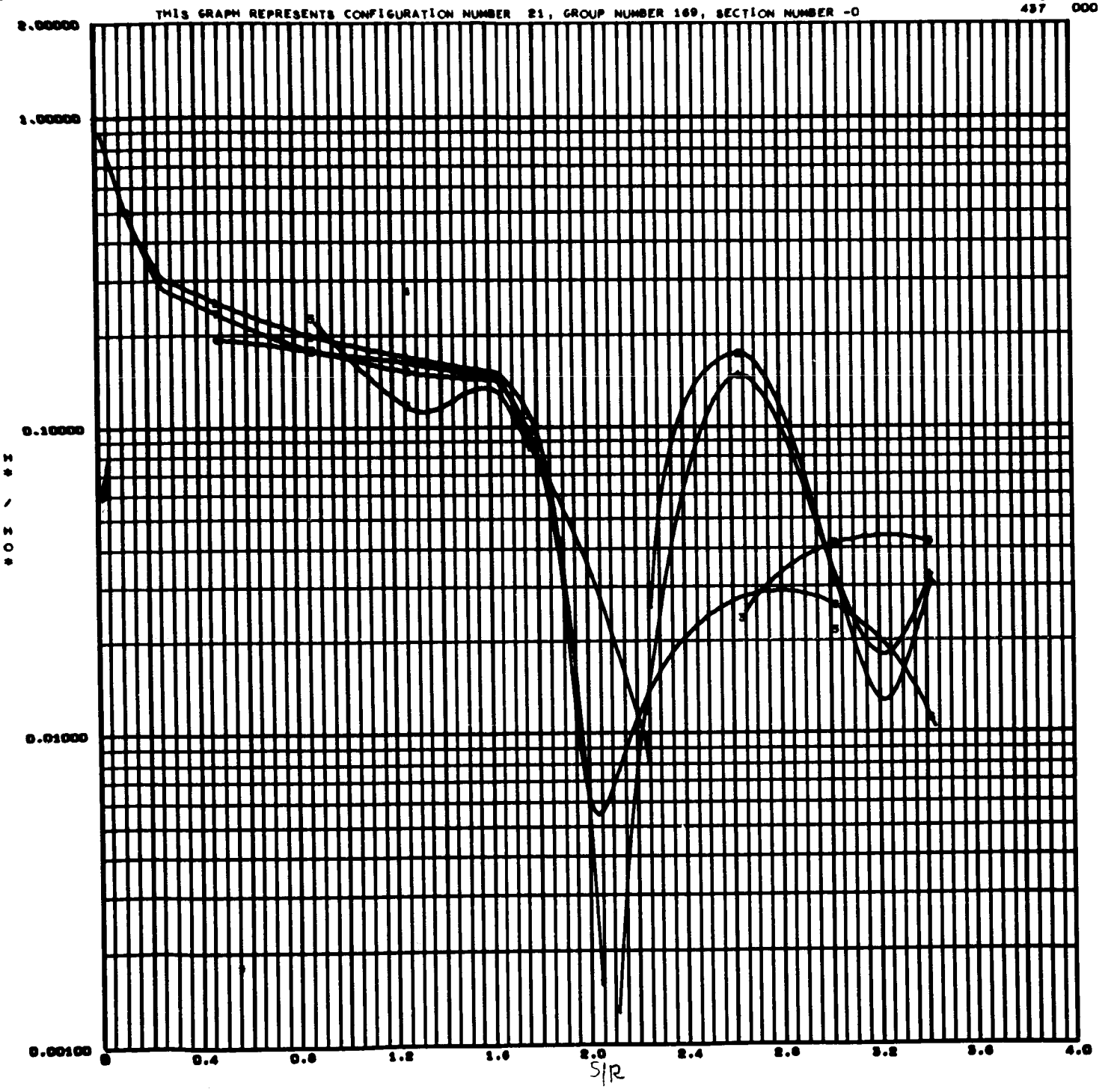
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 169
TOTAL PRESSURE 216.8 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1650.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	265.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
437 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 169, SECTION NUMBER -0



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

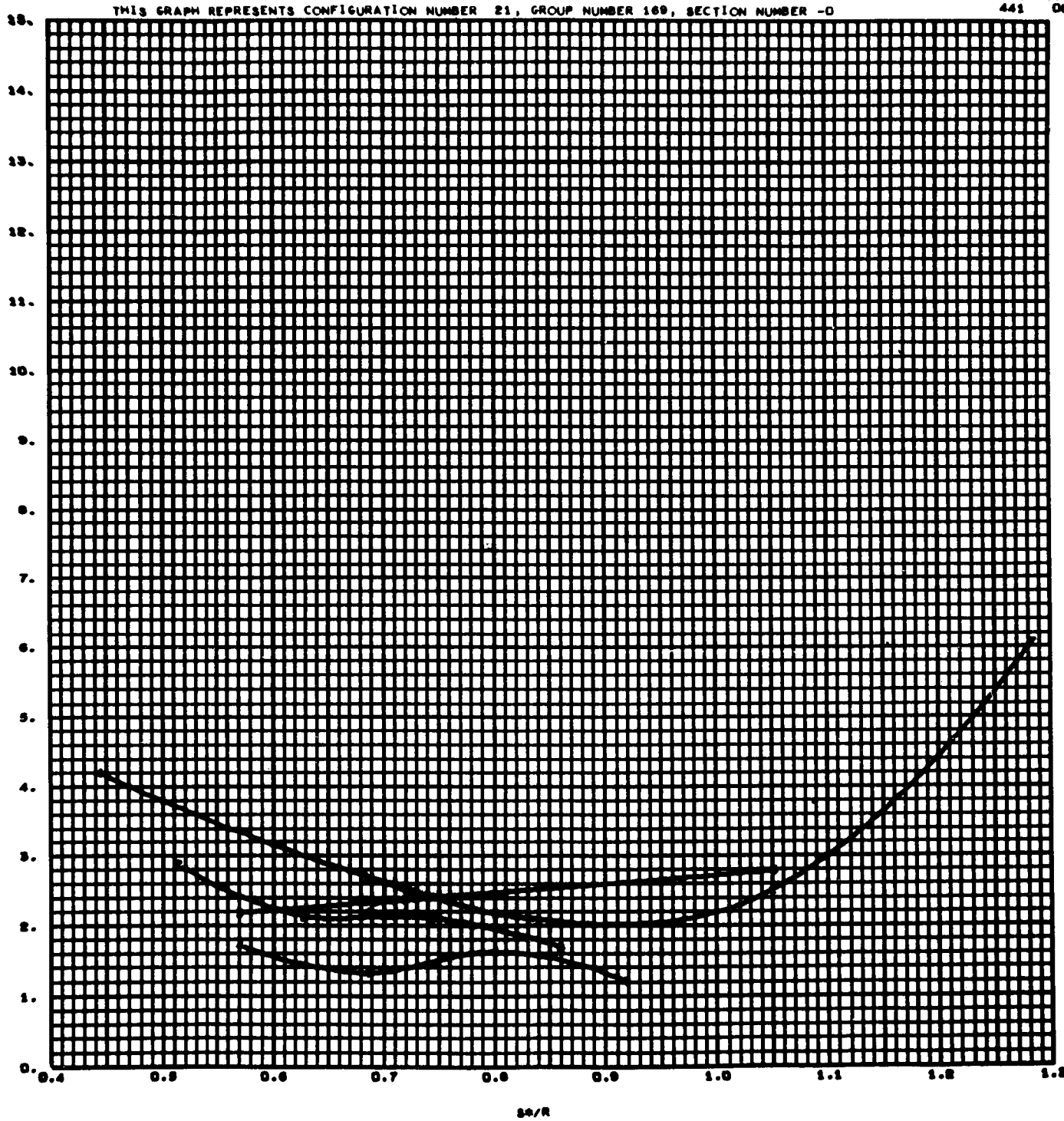
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 169
TOTAL PRESSURE 216.8 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1650.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11 L
441 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 169, SECTION NUMBER -0



[redacted]

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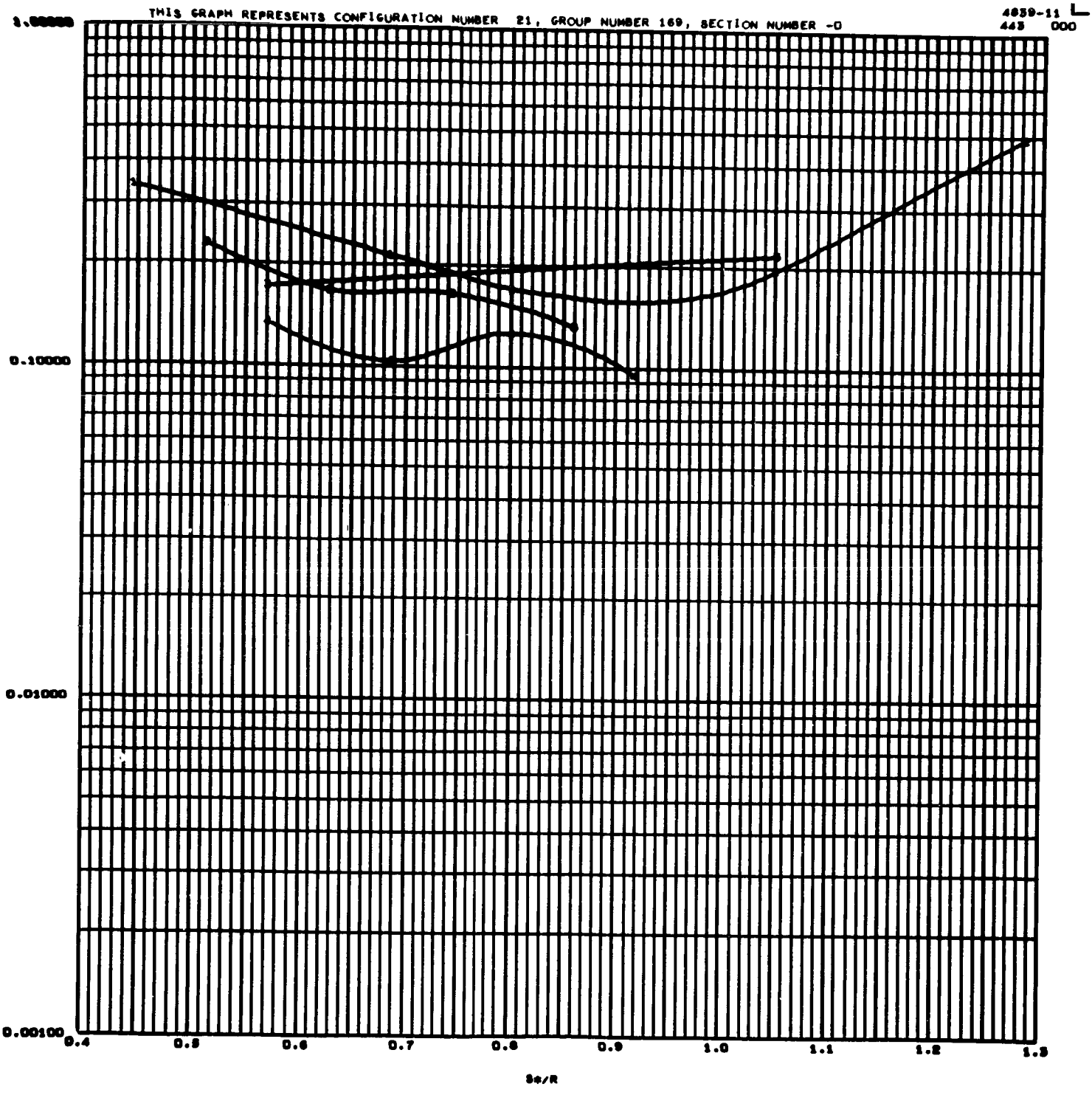
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 169
TOTAL PRESSURE 216.8 PSIA
REYNOLDS NUMBER PER INCH 0.0283 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1650.30 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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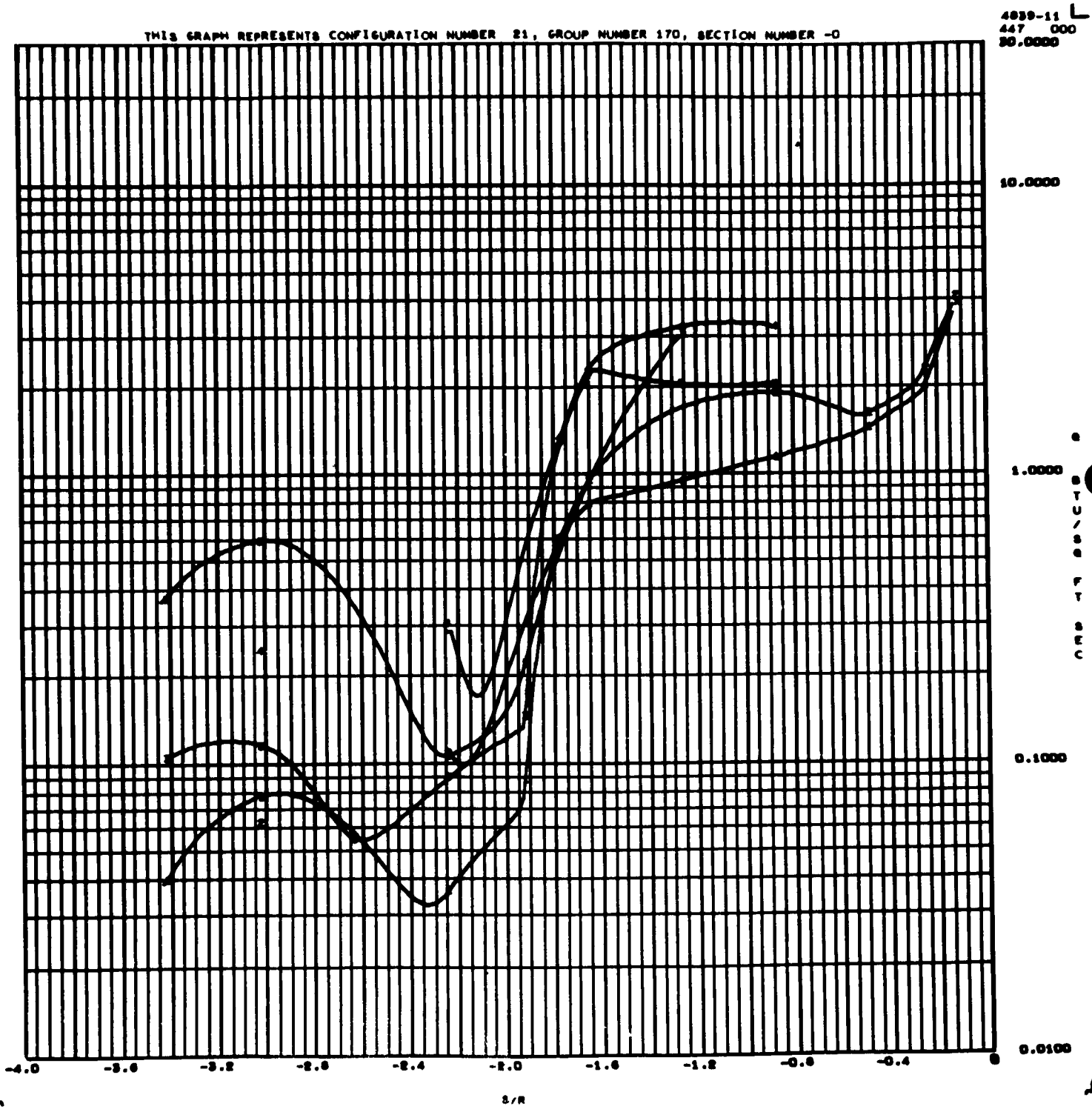
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 170
TOTAL PRESSURE 213.8 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1641.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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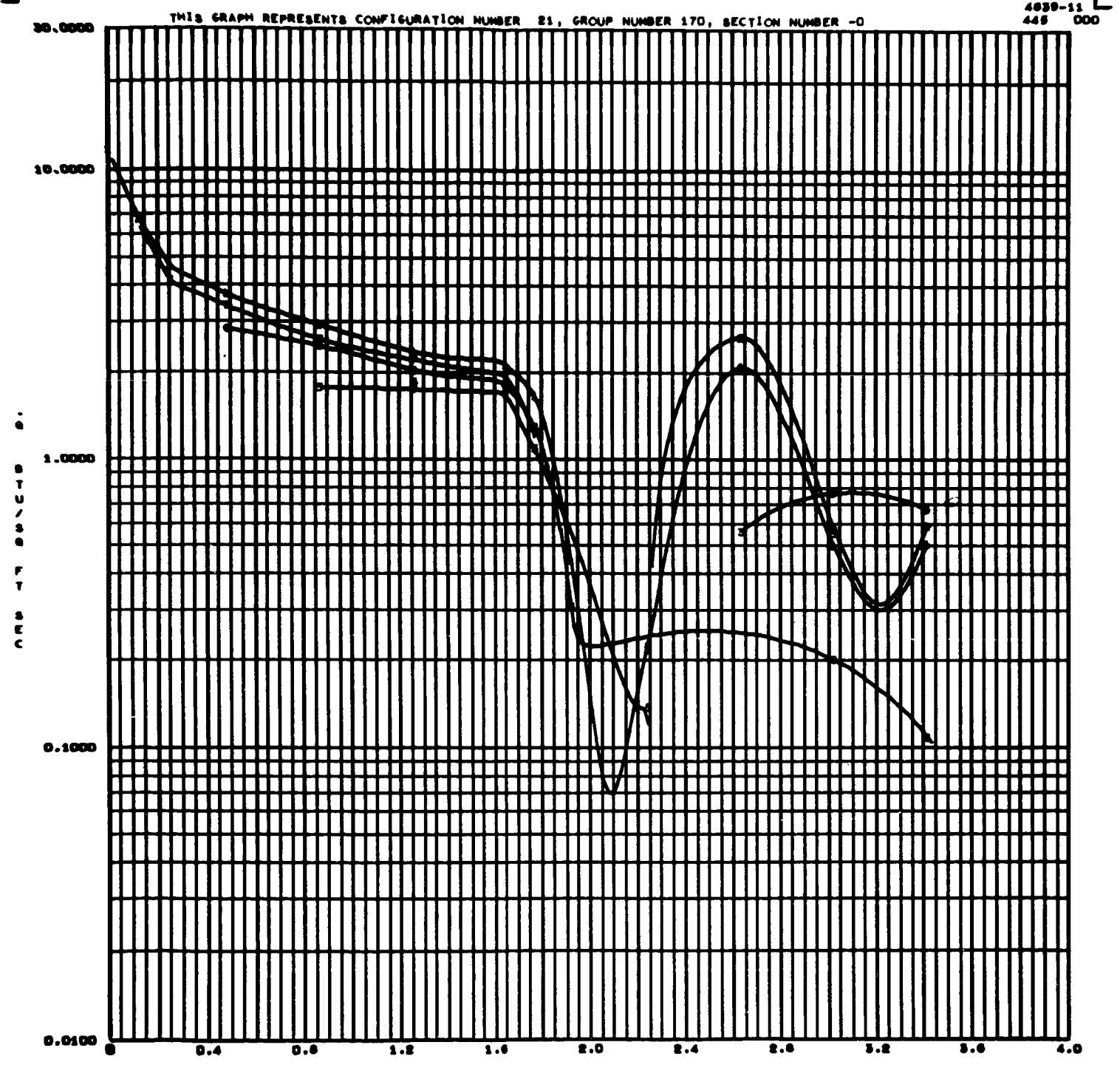
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 170
TOTAL PRESSURE 213.8 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1641.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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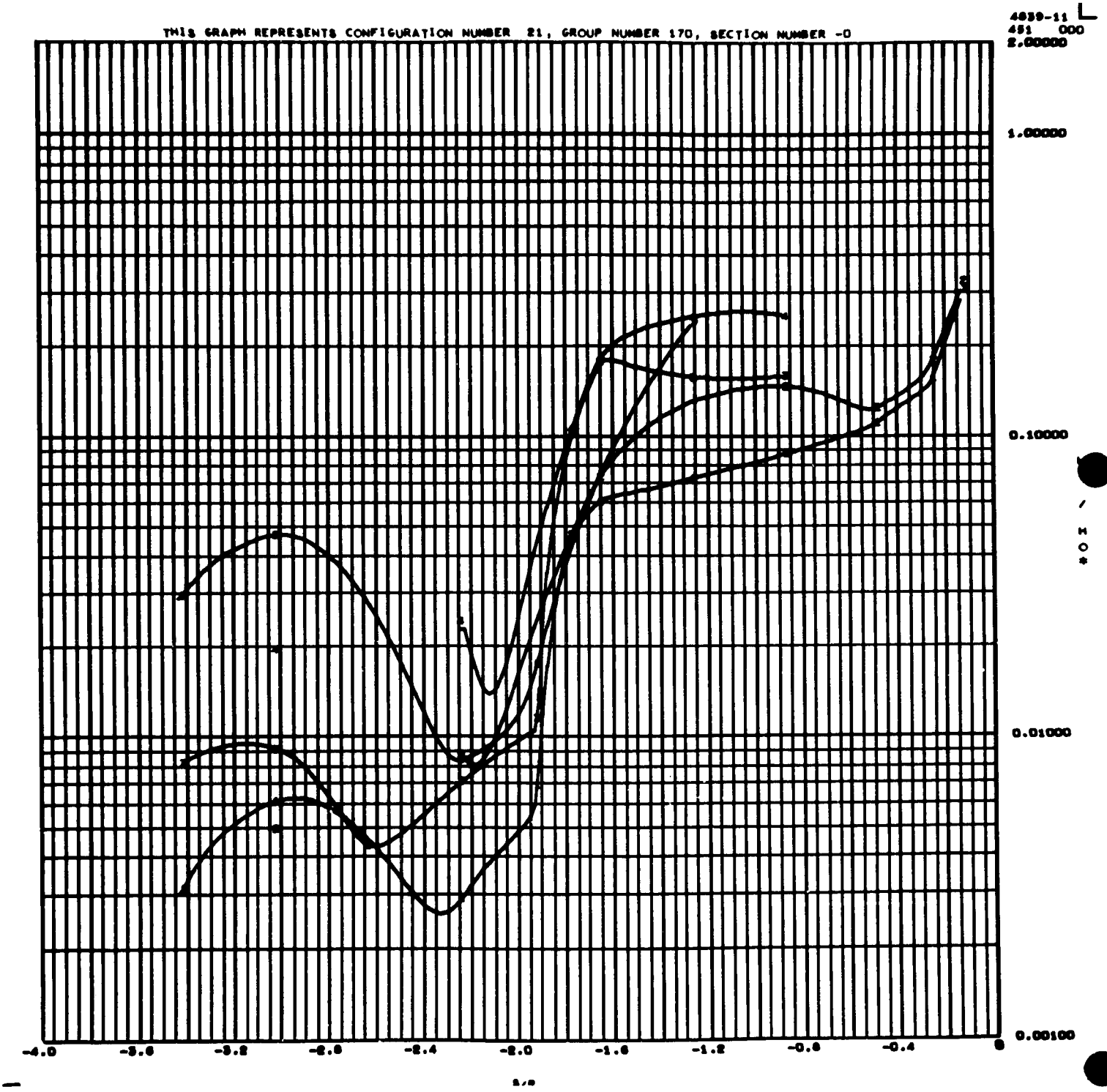
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 170
TOTAL PRESSURE 213.6 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
M_O^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1641.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

HEAT TRANSFER TEST

APOLLO

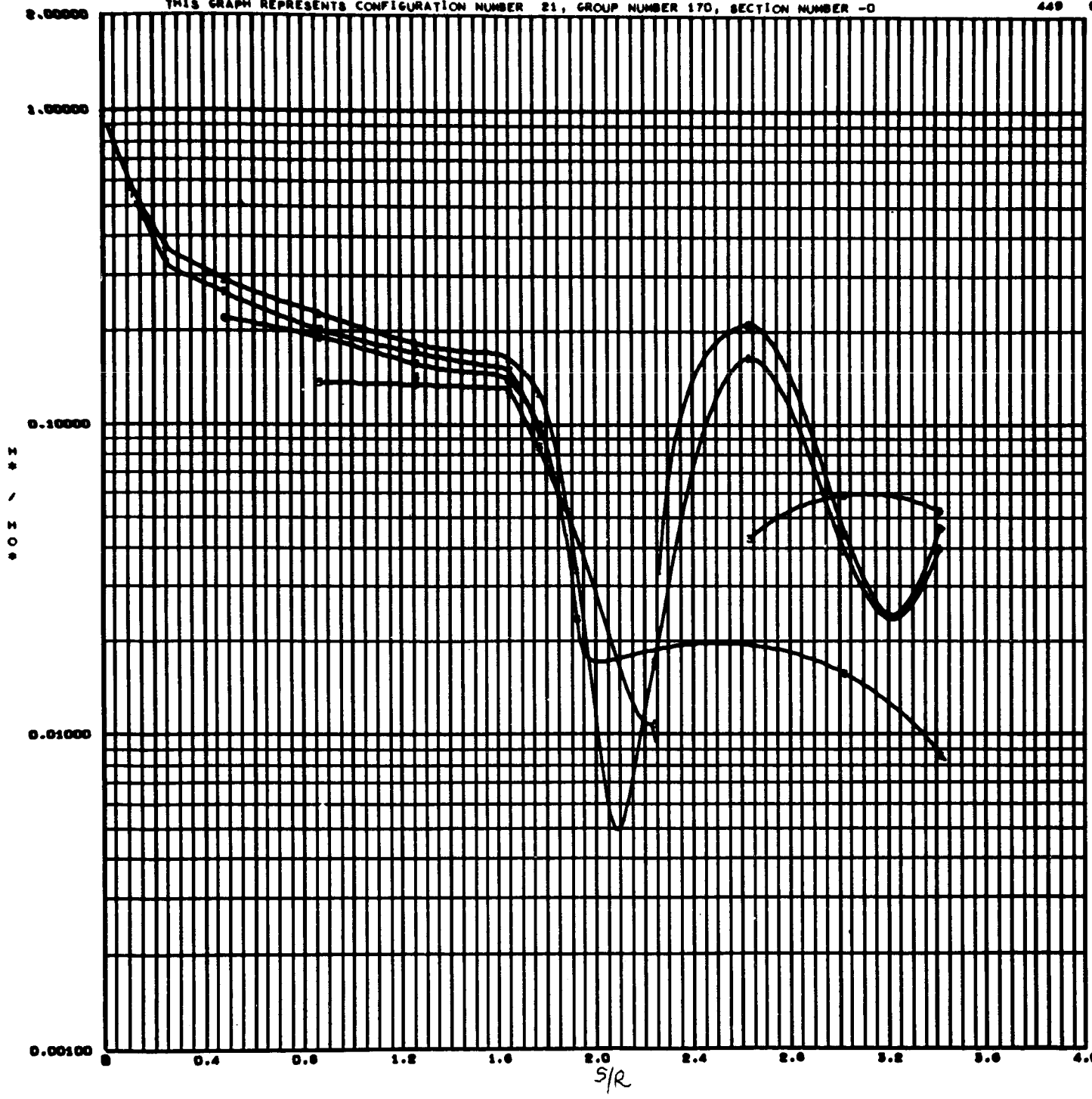
AEDC TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 170
TOTAL PRESSURE 213.8 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1641.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
449 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 170, SECTION NUMBER -0



[redacted]

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HEAT TRANSFER TEST

APOLLO

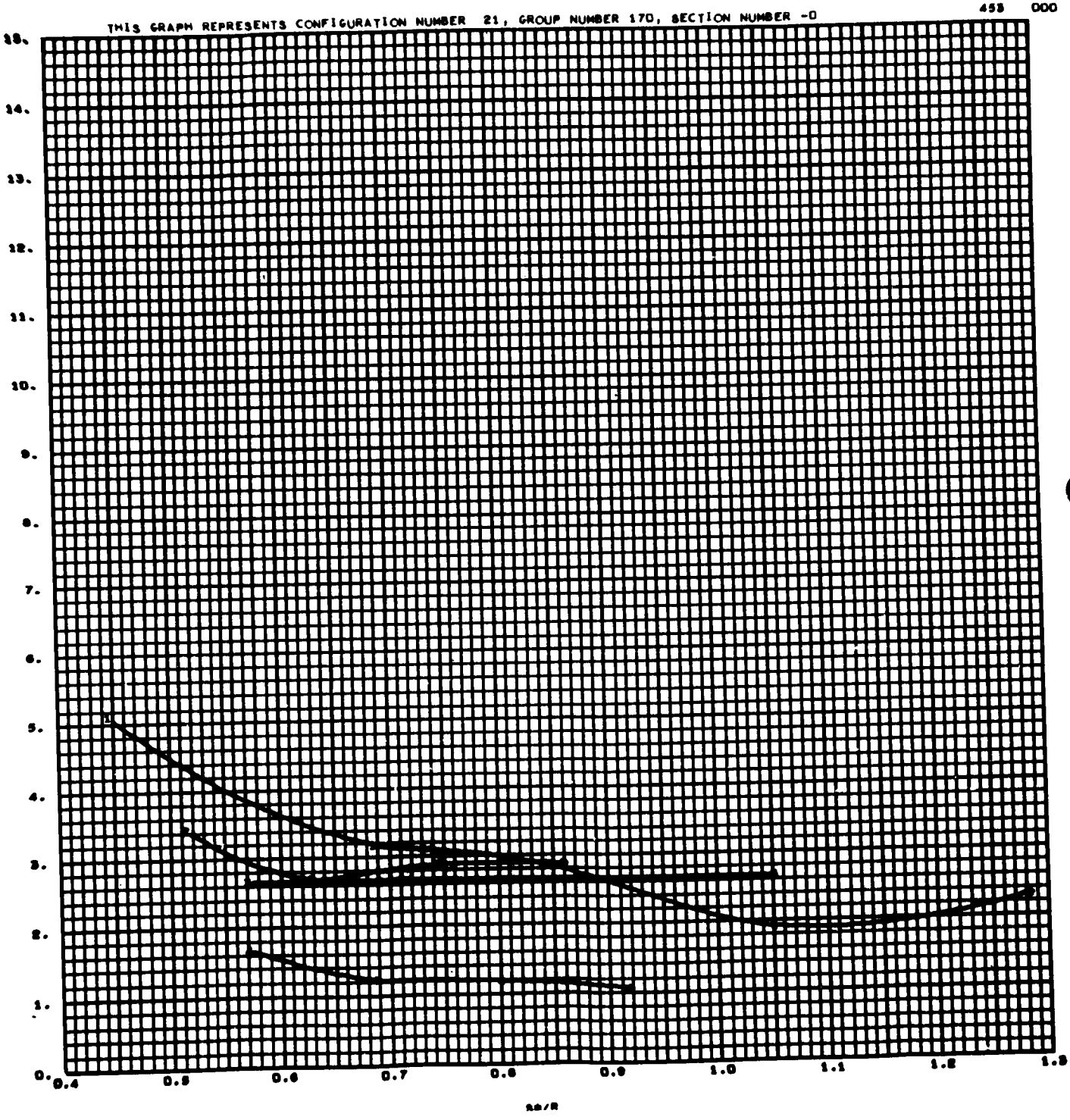
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 170
TOTAL PRESSURE 213.8 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1641.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11 L
453 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 170, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

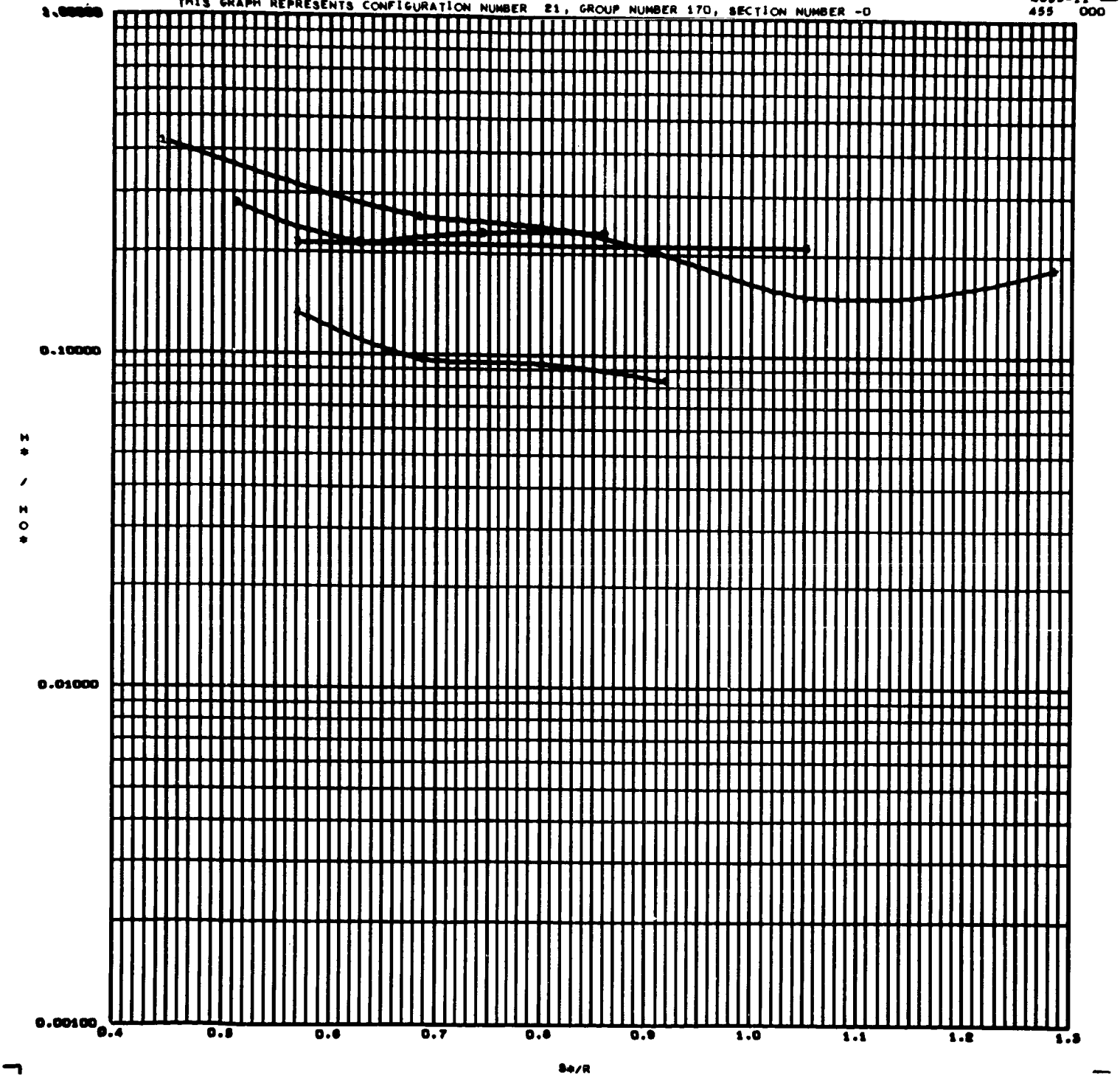
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 170
TOTAL PRESSURE 213.8 PSIA
REYNOLDS NUMBER PER INCH 0.0282 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1641.60 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 170, SECTION NUMBER -0

4839-11 L
455 000



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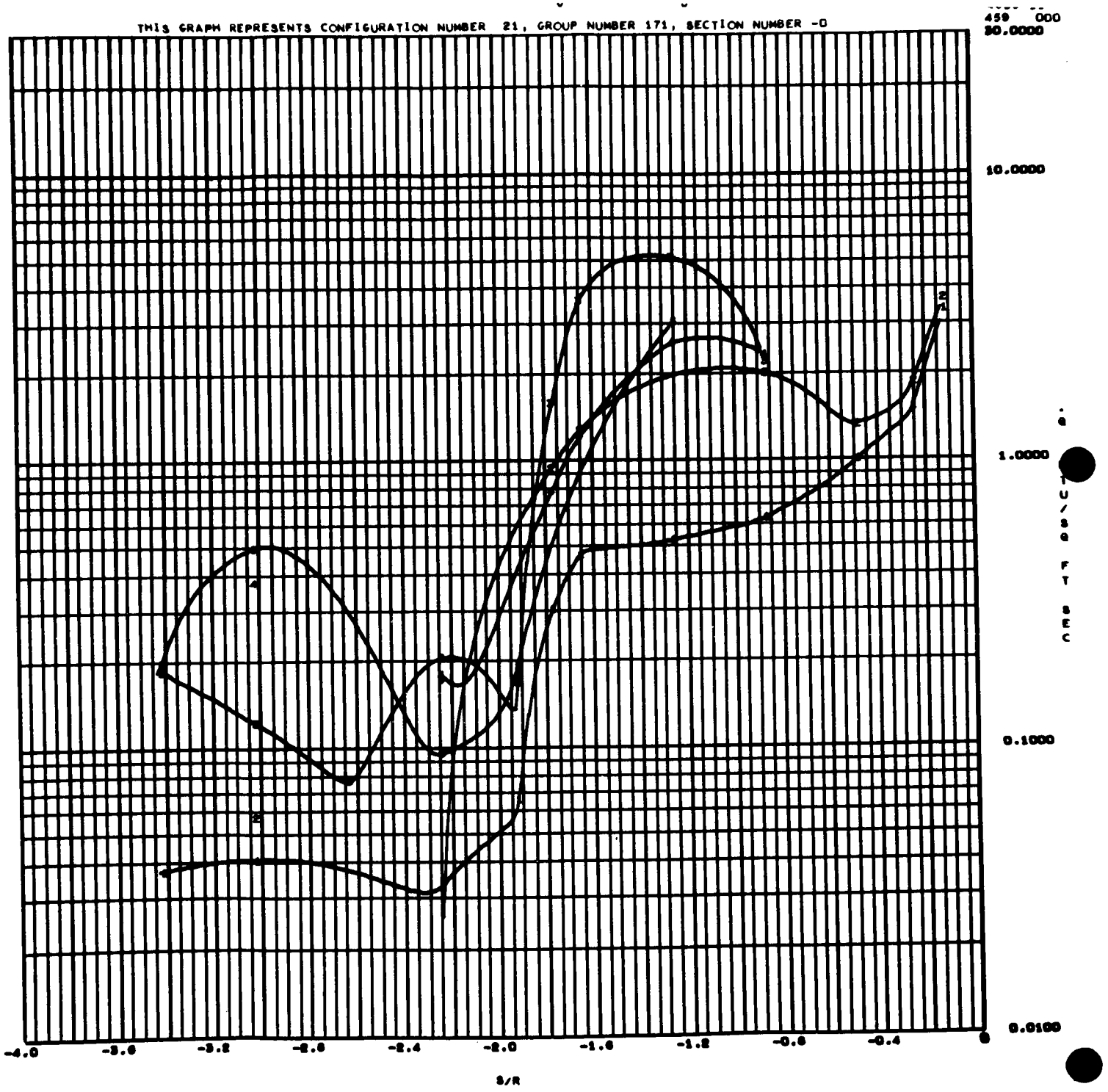
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 171
TOTAL PRESSURE 212.5 PSIA
REYNOLDS NUMBER PER INCH 0.0279 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.00 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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[redacted]

HEAT TRANSFER TEST

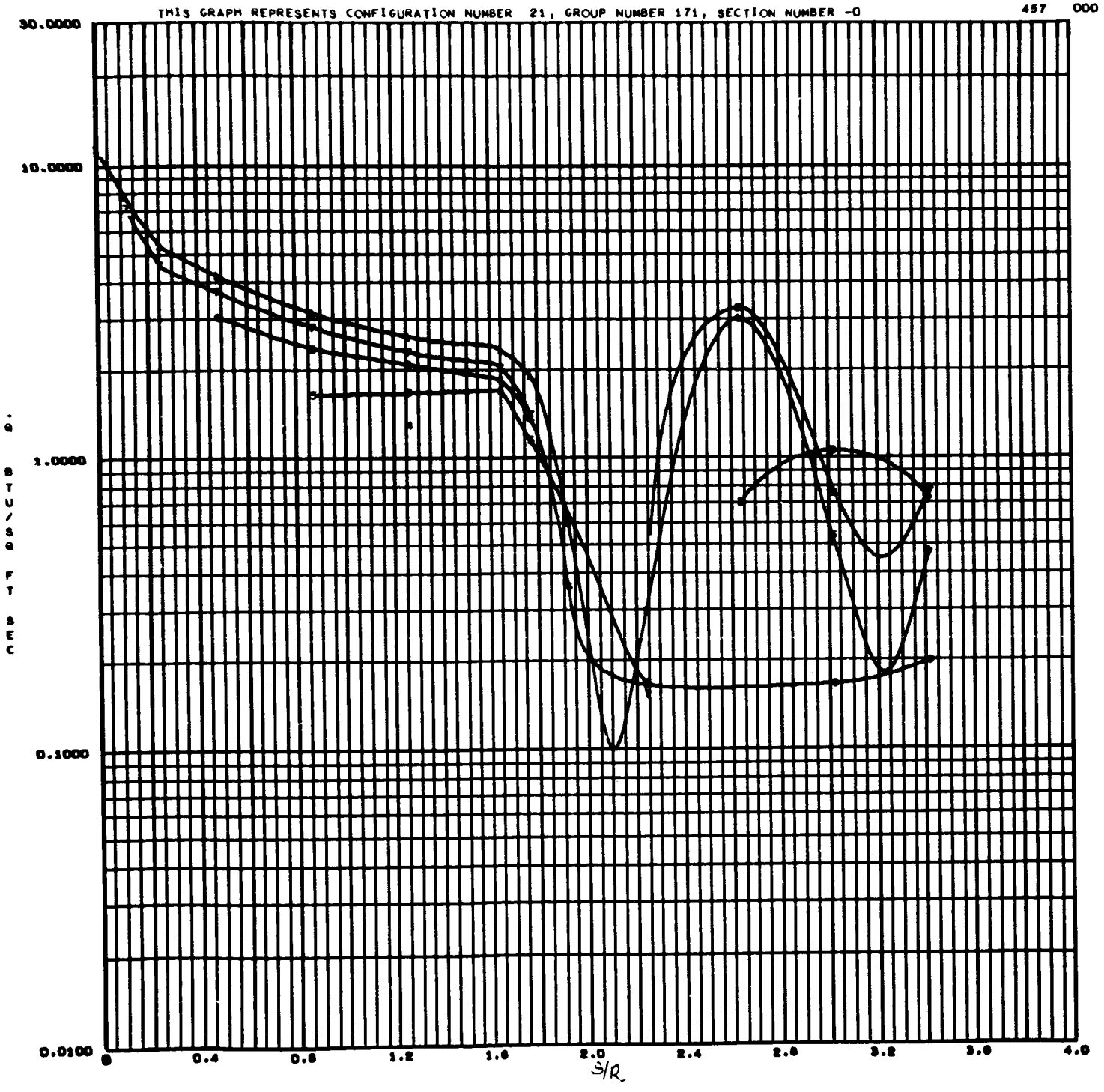
APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 171
TOTAL PRESSURE 212.5 PSIA
REYNOLDS NUMBER PER INCH 0.0279 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.00 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
457 000



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[redacted]

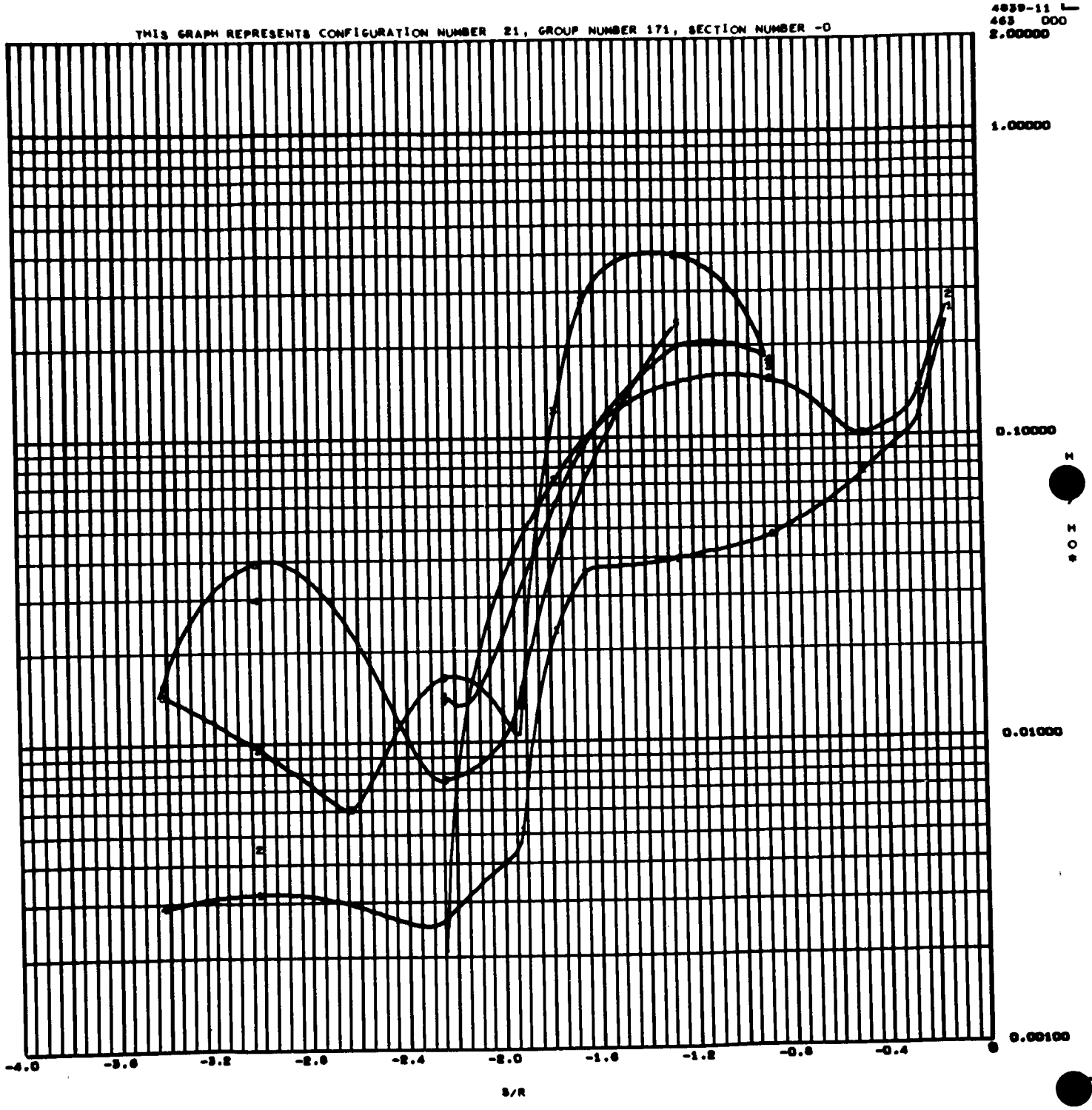
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 171
TOTAL PRESSURE 212.5 PSIA
REYNOLDS NUMBER PER INCH 0.0279 x 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.00 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

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HEAT TRANSFER TEST

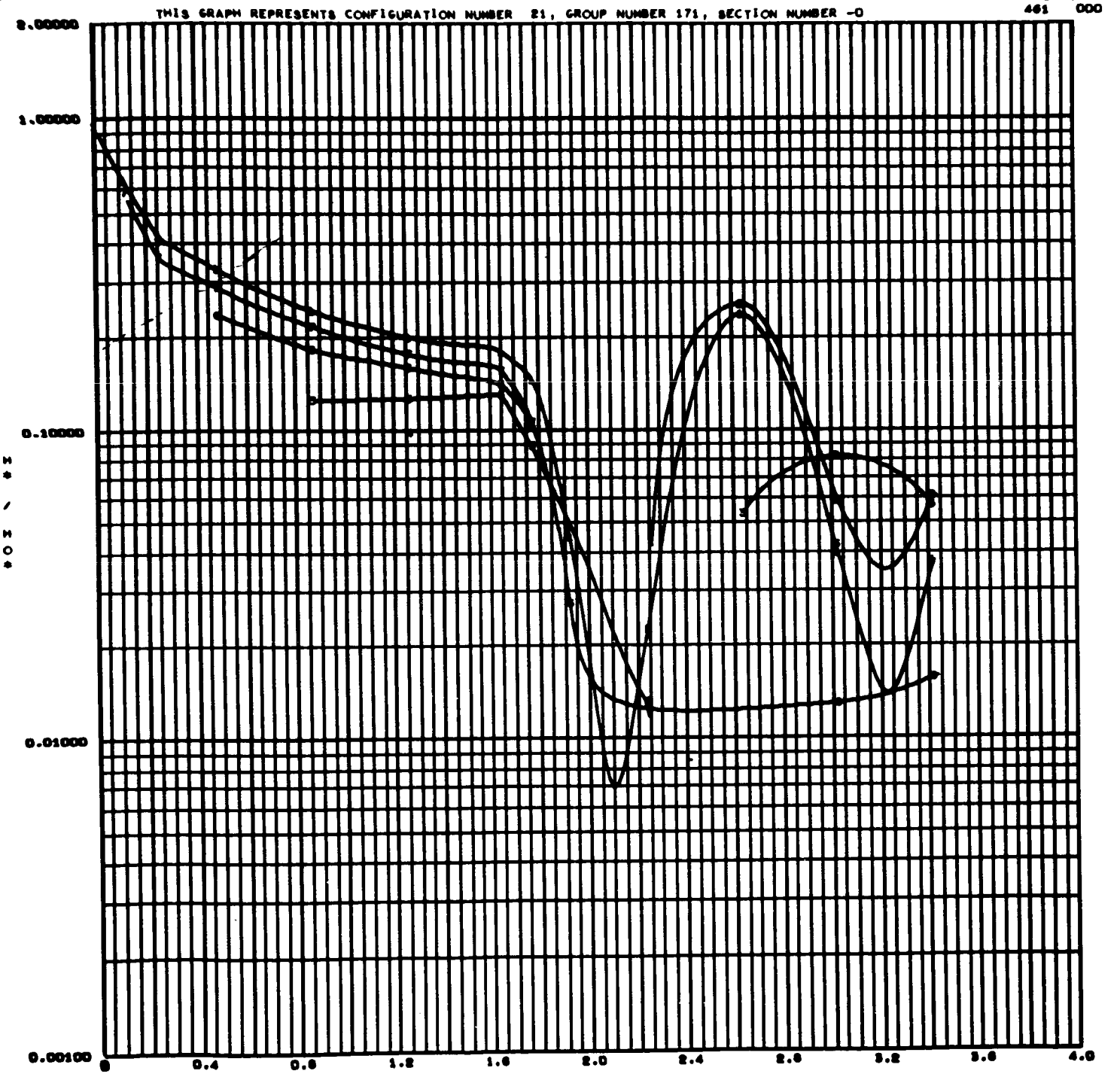
APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 171
TOTAL PRESSURE 212.5 PSIA
REYNOLDS NUMBER PER INCH 0.0279 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.00 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4039-11
461 000



CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

APOLLO

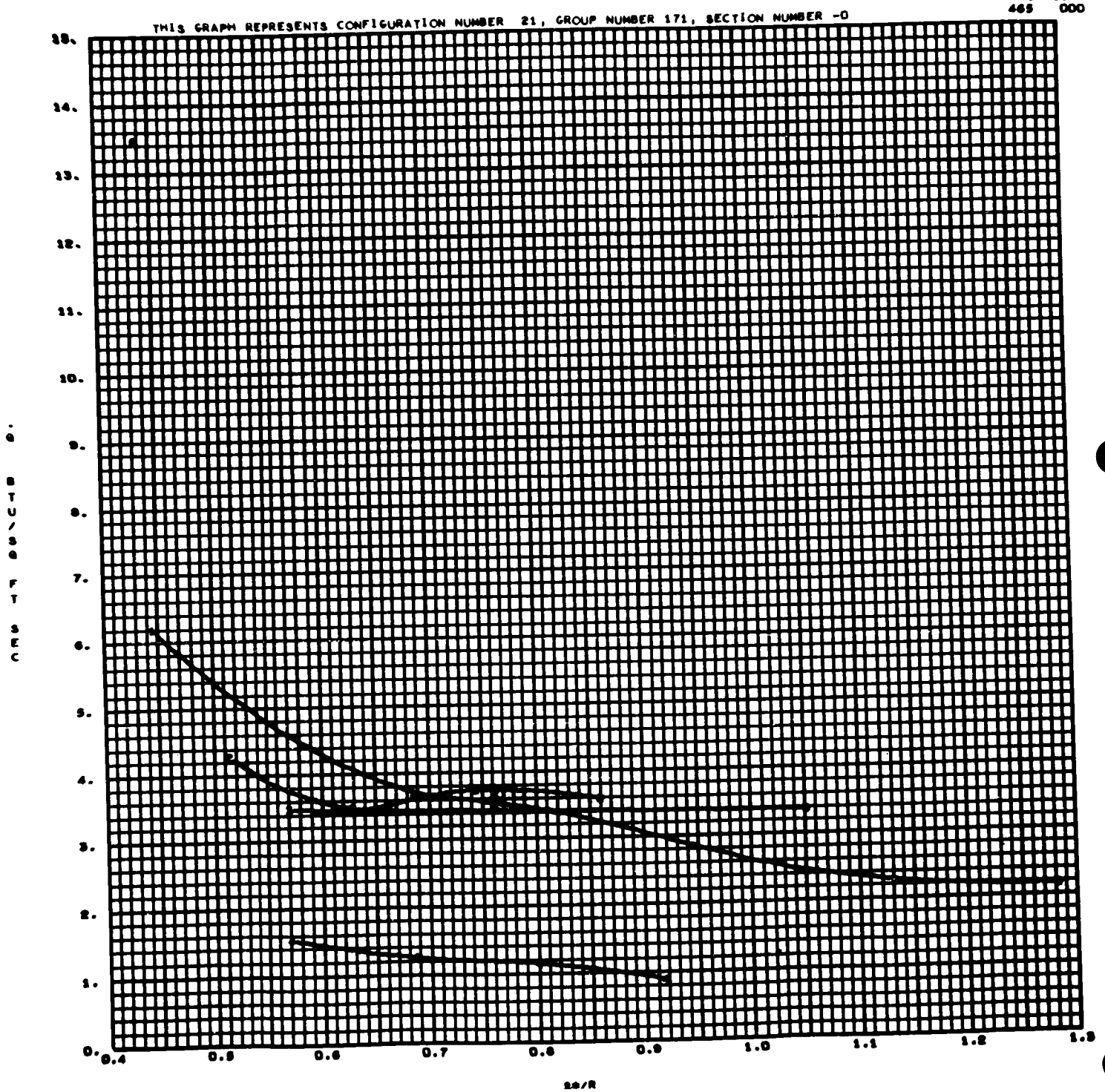
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 171
TOTAL PRESSURE 212.5 PSIA
REYNOLDS NUMBER PER INCH 0.0279 X 10^6
H_o * 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.00 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4039-11 L
465 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 171, SECTION NUMBER -0



[redacted]

HEAT TRANSFER TEST

APOLLO

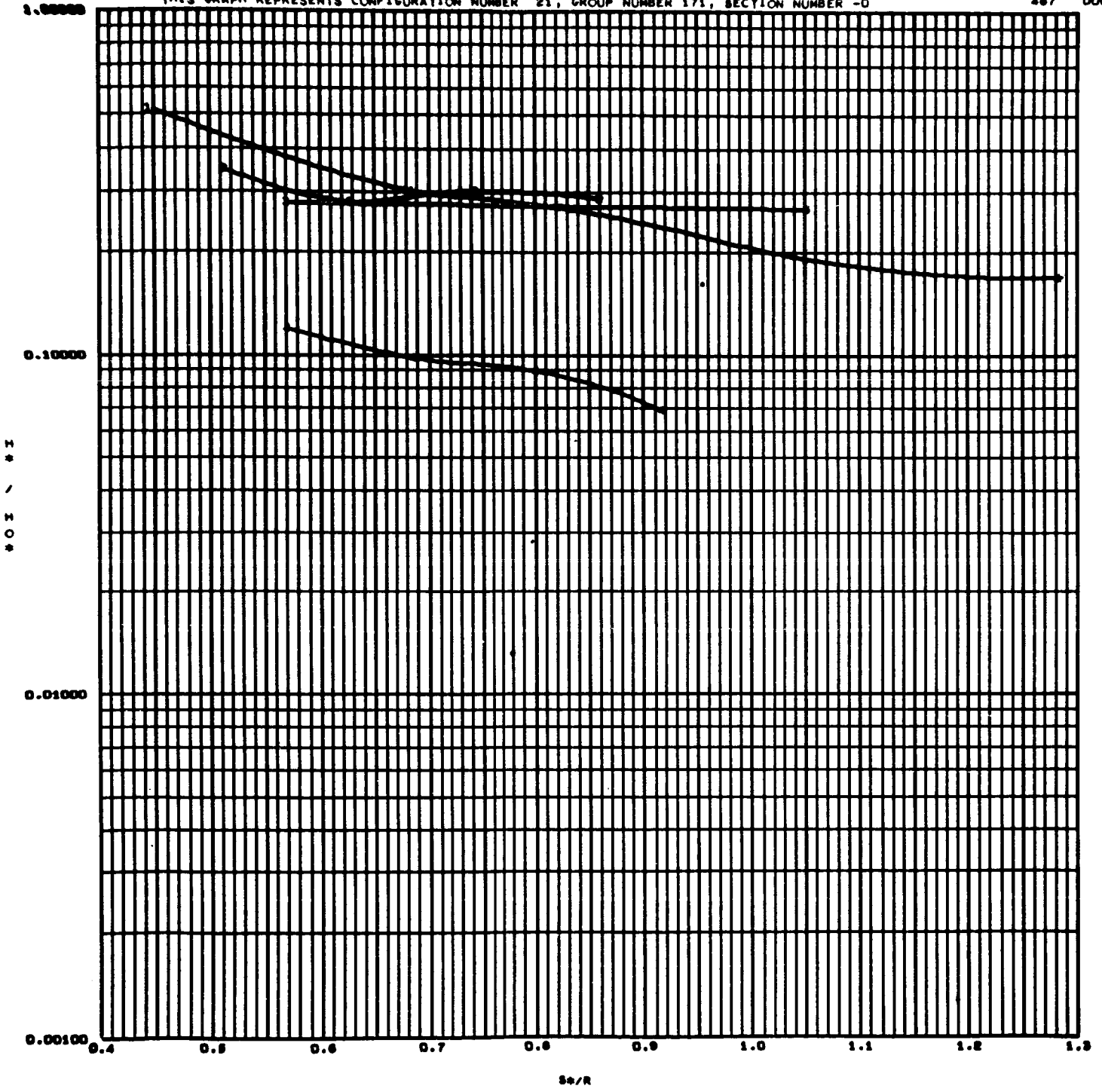
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.04
GROUP NO. 171
TOTAL PRESSURE 212.5 PSIA
REYNOLDS NUMBER PER INCH 0.0279 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1644.00 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-11 L
467 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 171, SECTION NUMBER -0



[redacted]

HEAT TRANSFER TEST

APOLLO

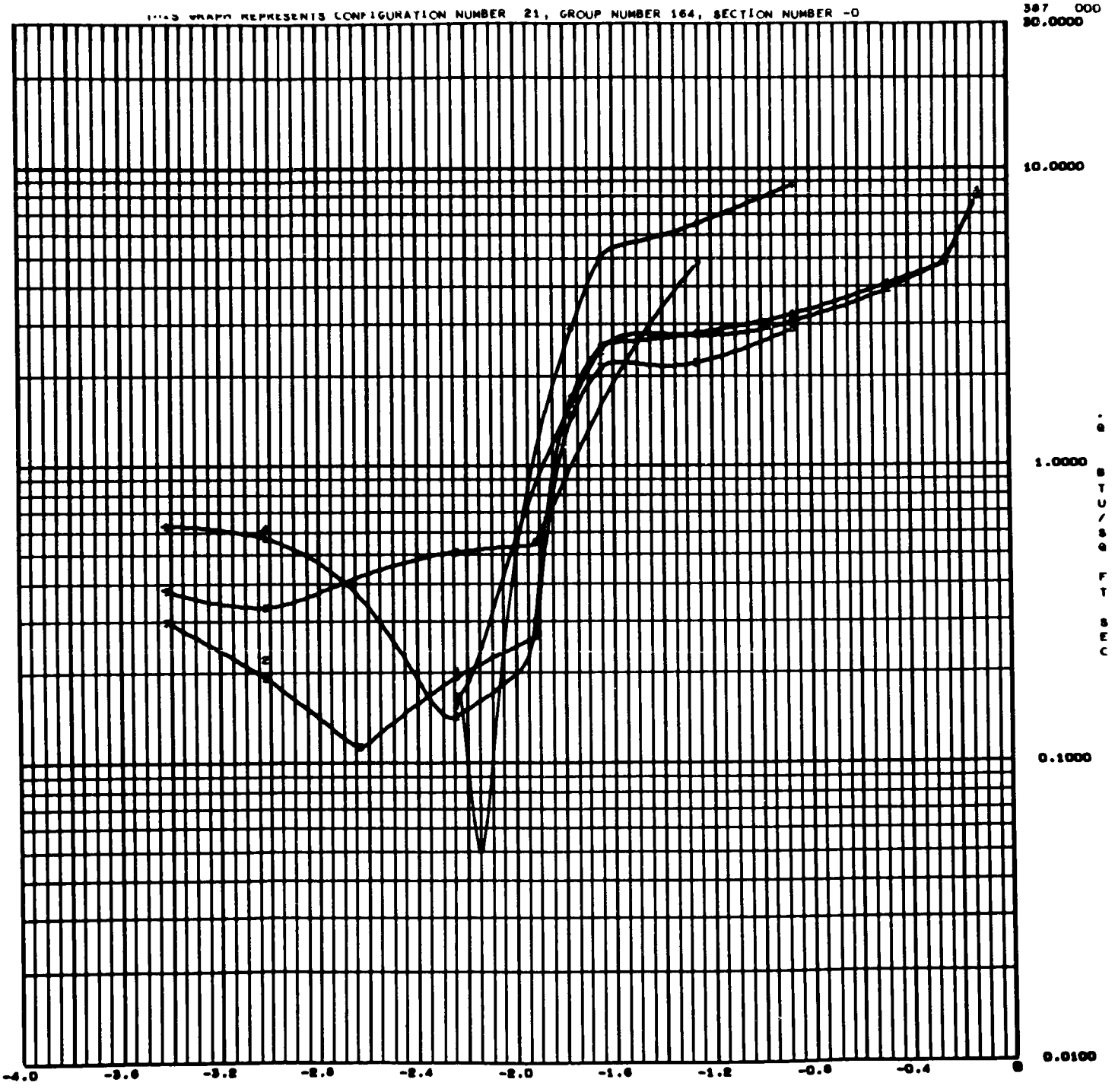
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 164
TOTAL PRESSURE 465.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 164, SECTION NUMBER -0

4839-11 L
387 000



[redacted]

[redacted]

HEAT TRANSFER TEST

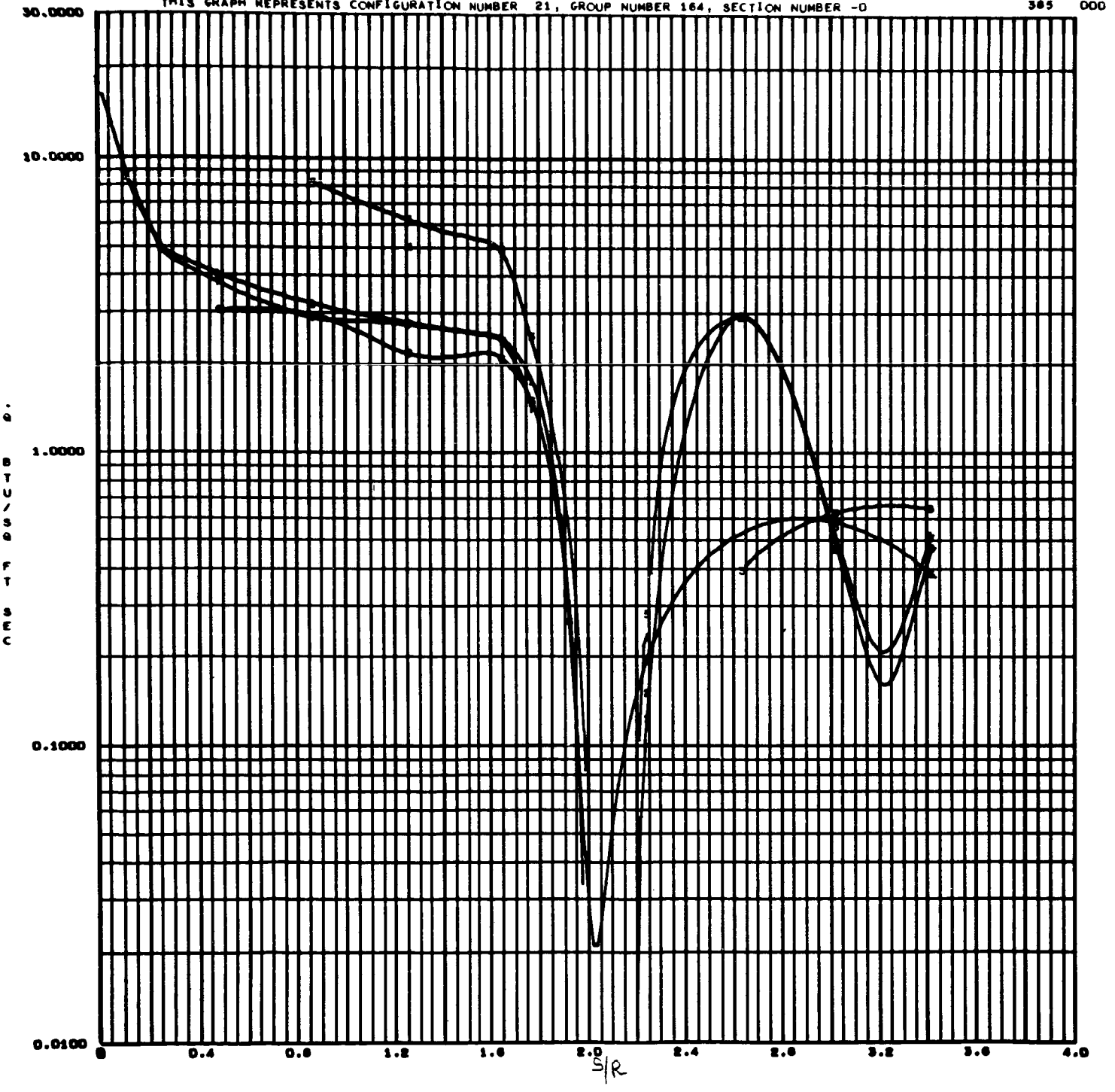
APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 164
TOTAL PRESSURE 465.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
M_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4639-11
385 000



[redacted]

CONFIDENTIAL

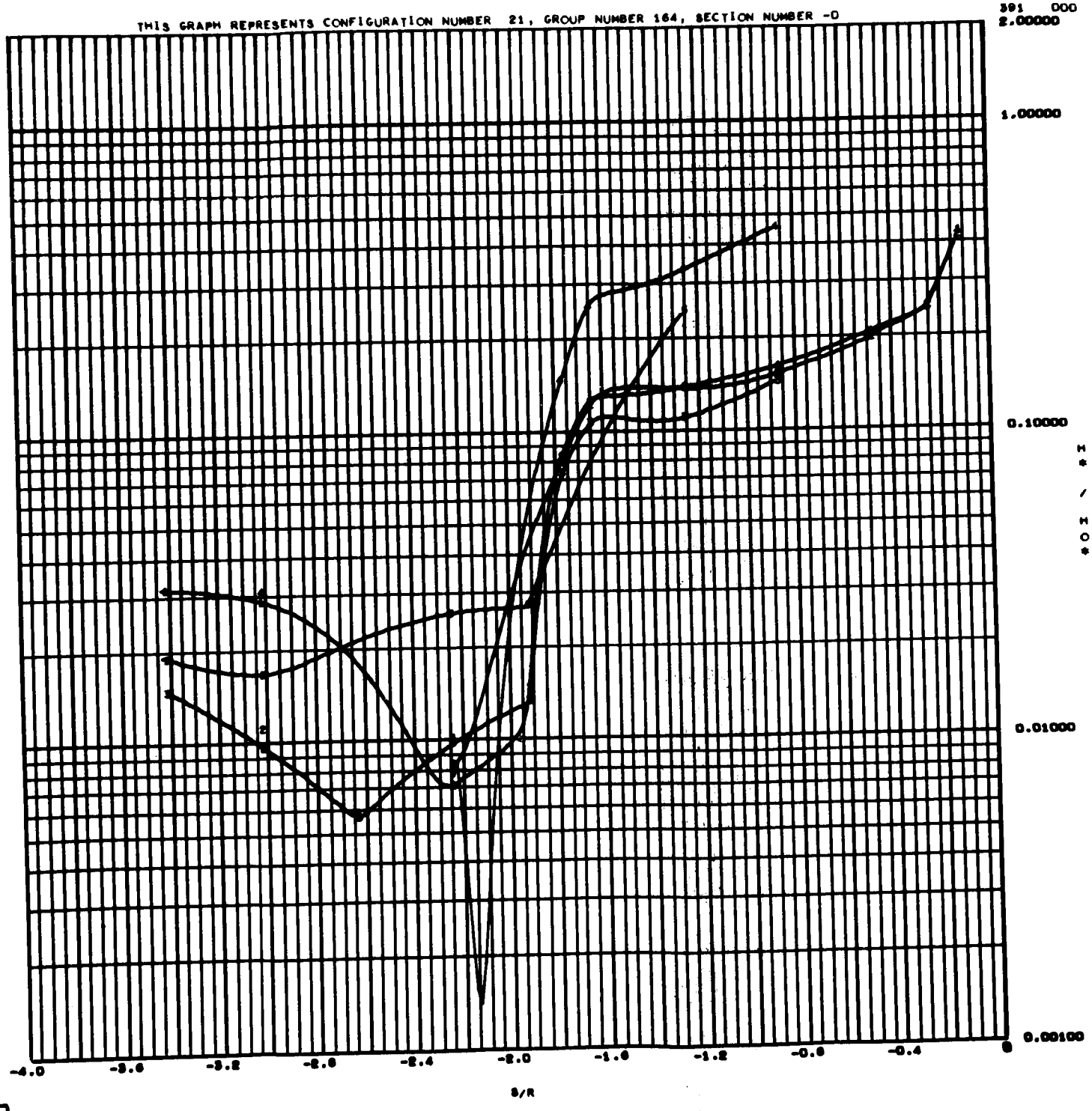
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 164
TOTAL PRESSURE 465.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

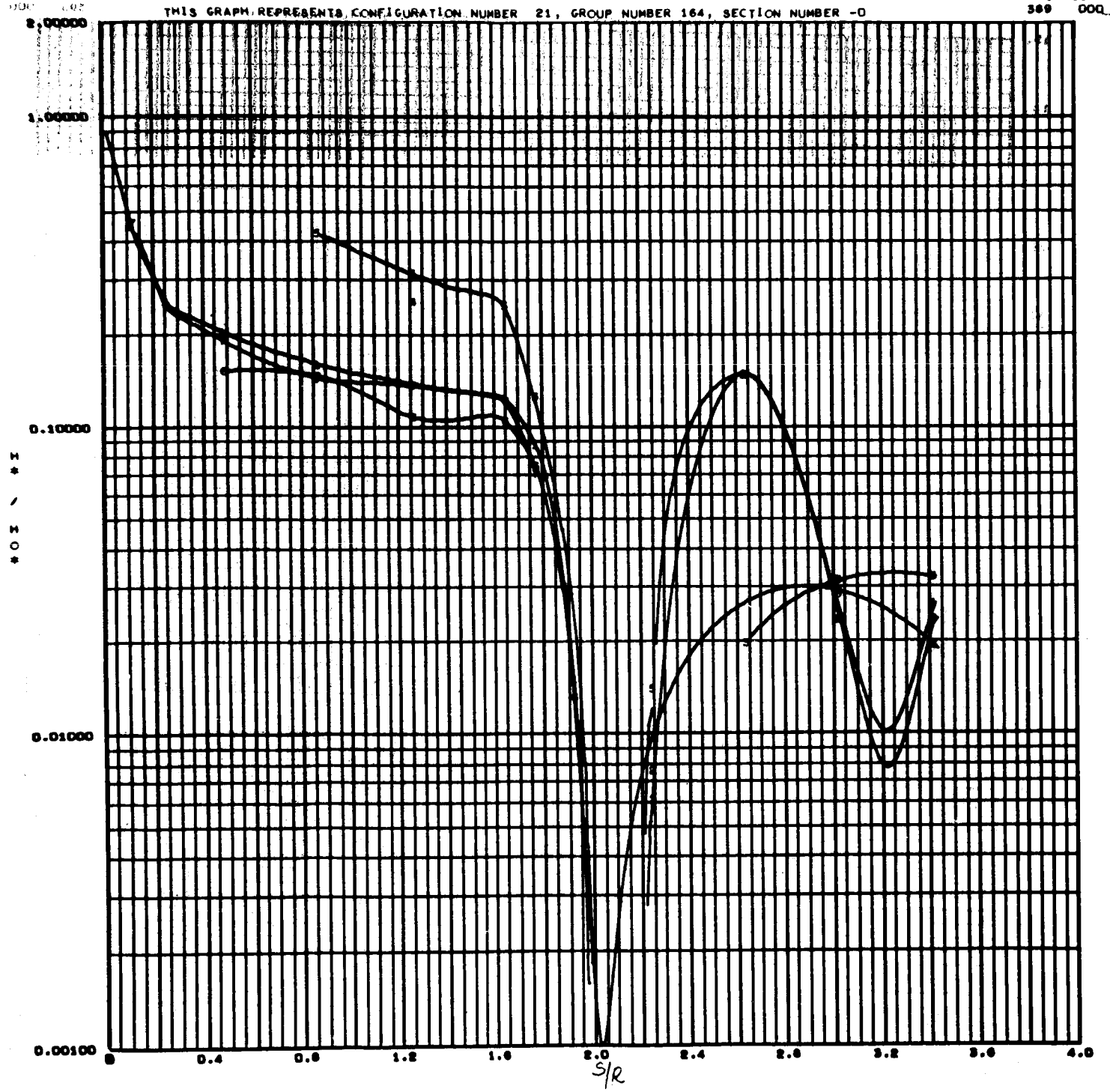
A E D C TUNNEL C-

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 164
TOTAL PRESSURE 465.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3		
277.5	4	285.0	5

4839-11
389 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 164, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

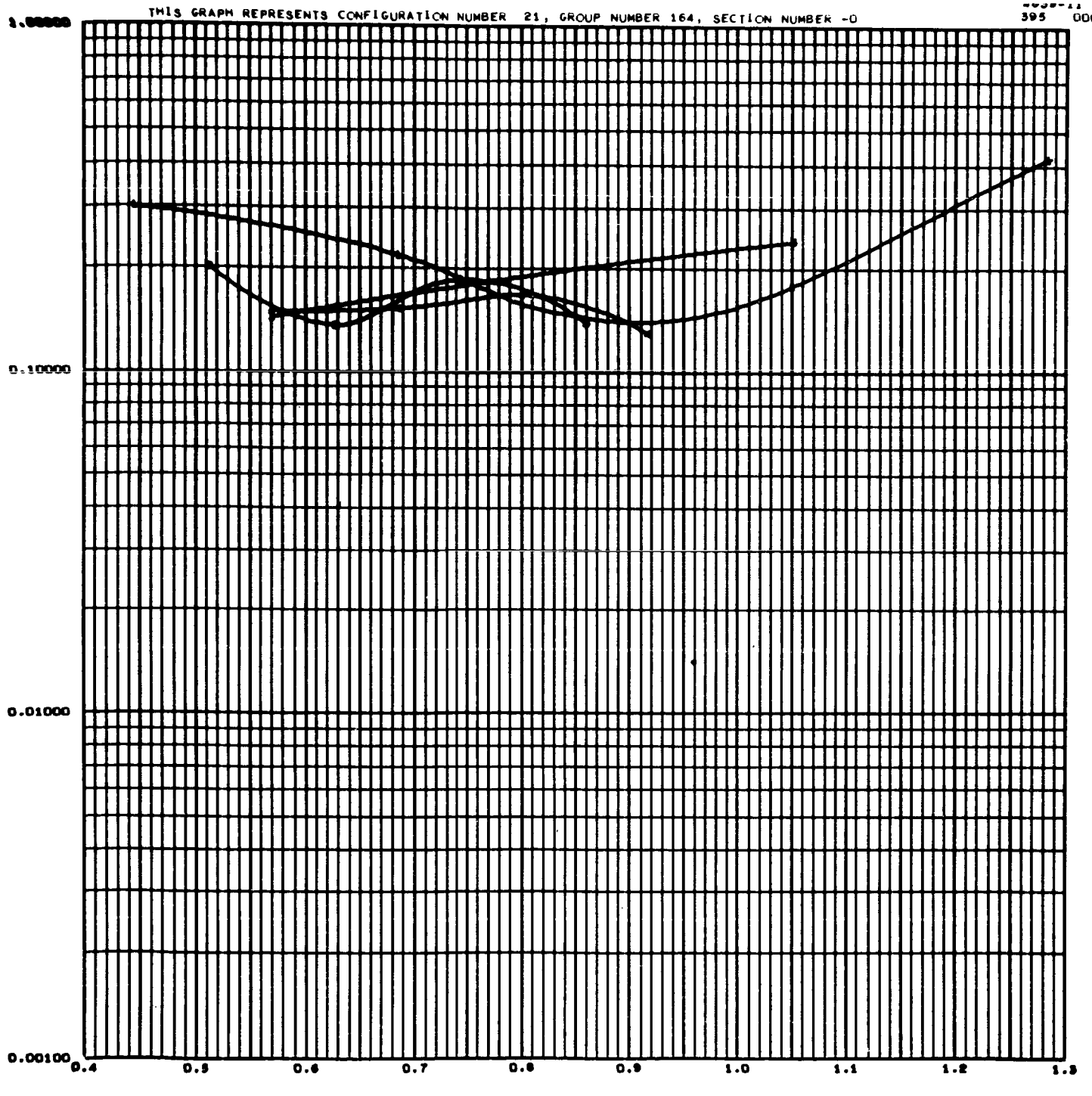
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 164
TOTAL PRESSURE 465.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1733.20 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 164, SECTION NUMBER -0

395 000



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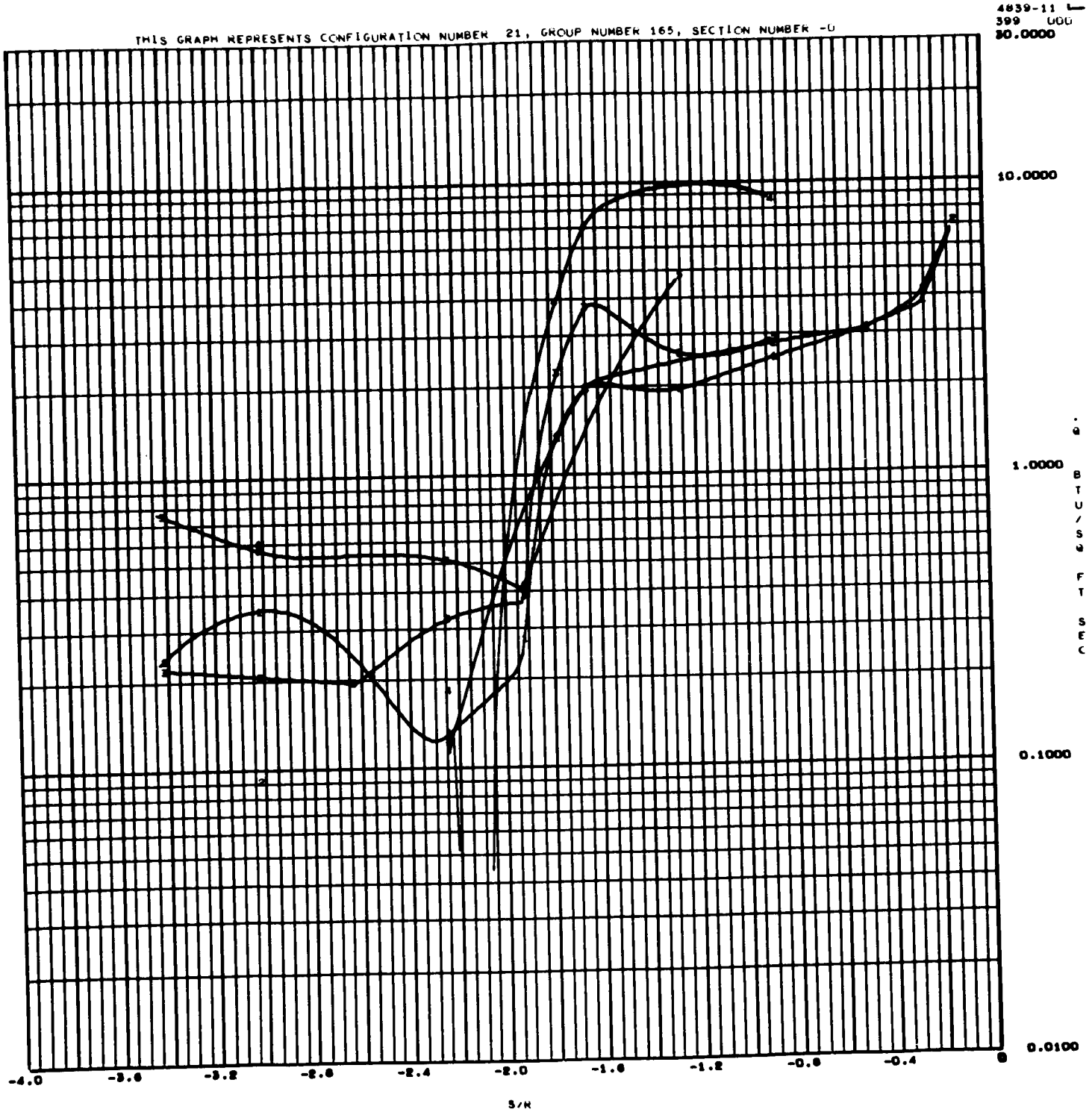
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 165
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.60 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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[redacted]

HEAT TRANSFER TEST

APOLLO

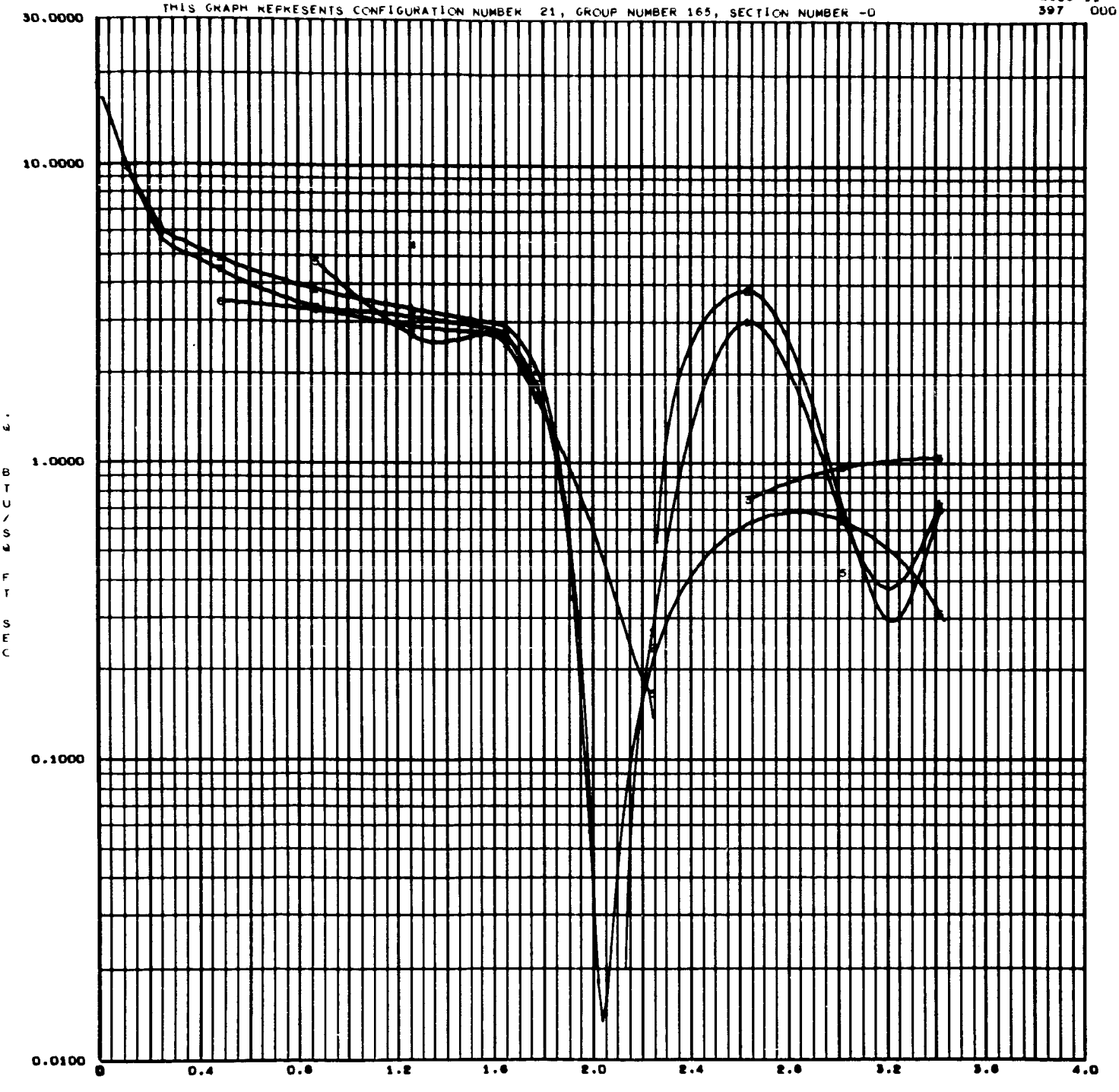
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 165
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.60 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
397 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 165, SECTION NUMBER -0



[redacted]

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HEAT TRANSFER TEST

APOLLO

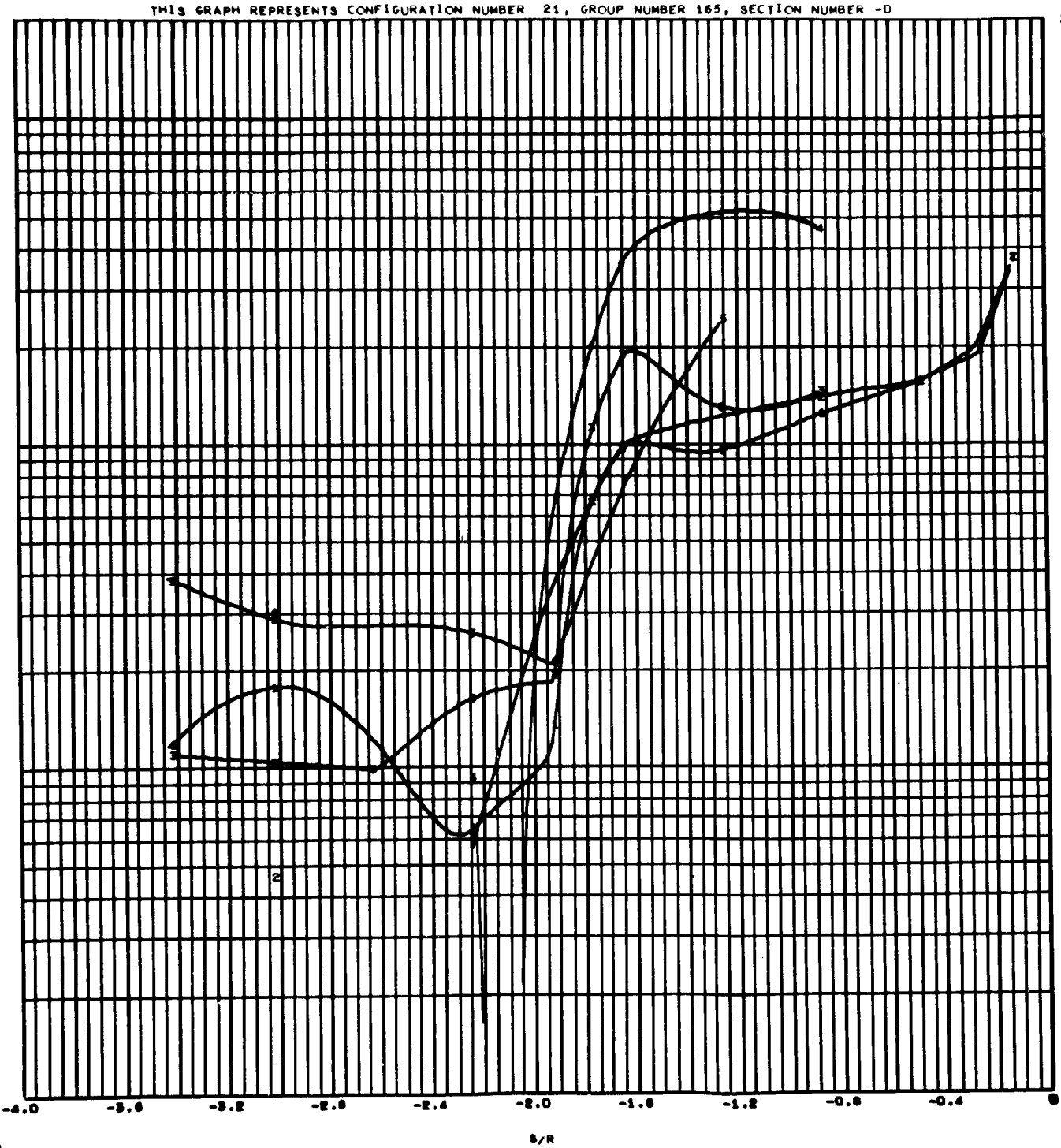
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 165
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.60 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11 L
403 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 165, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

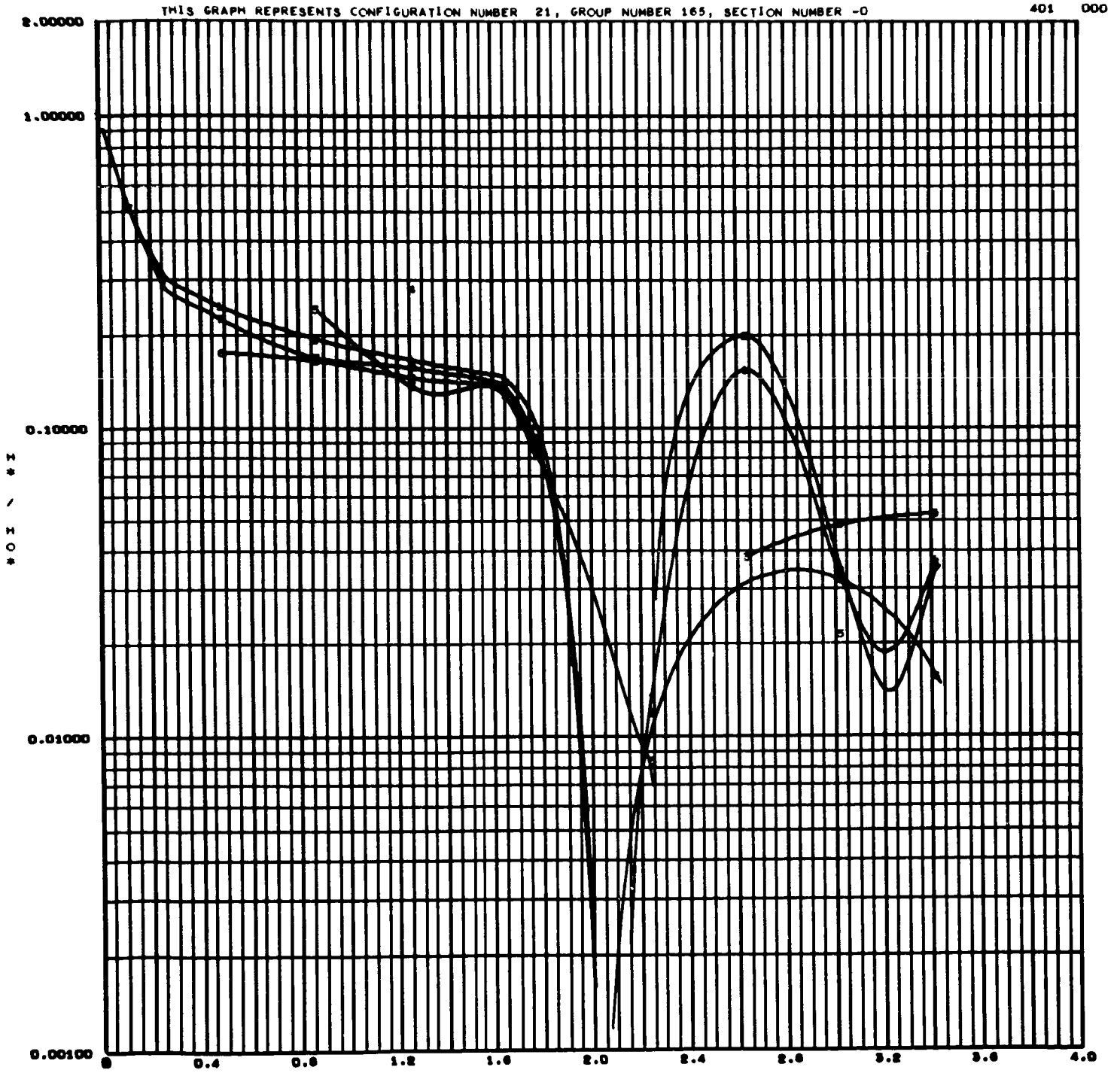
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 165
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.60 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
401 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 165, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

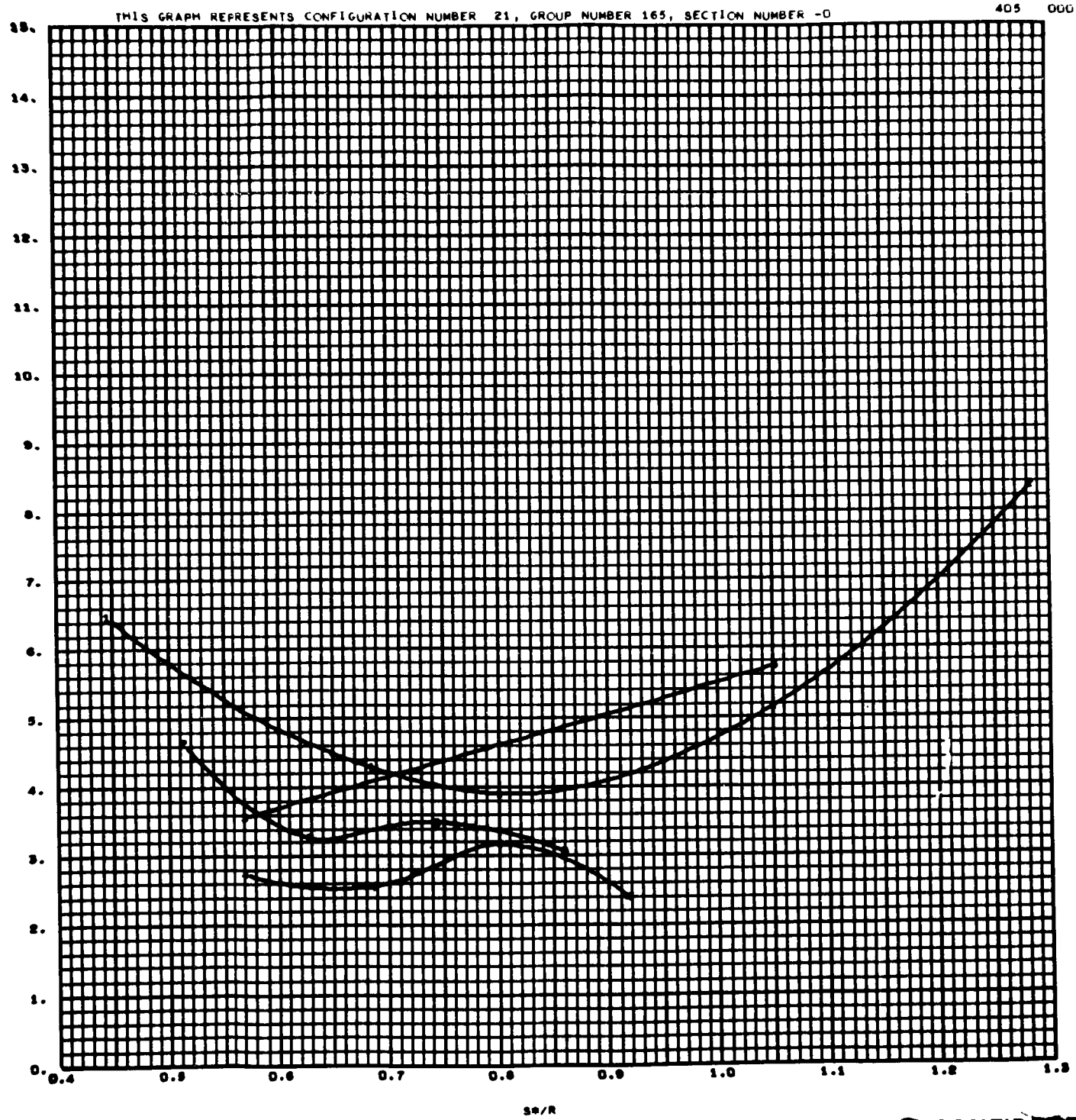
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 165
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.60 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
405 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 165, SECTION NUMBER -0



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[redacted]

HEAT TRANSFER TEST

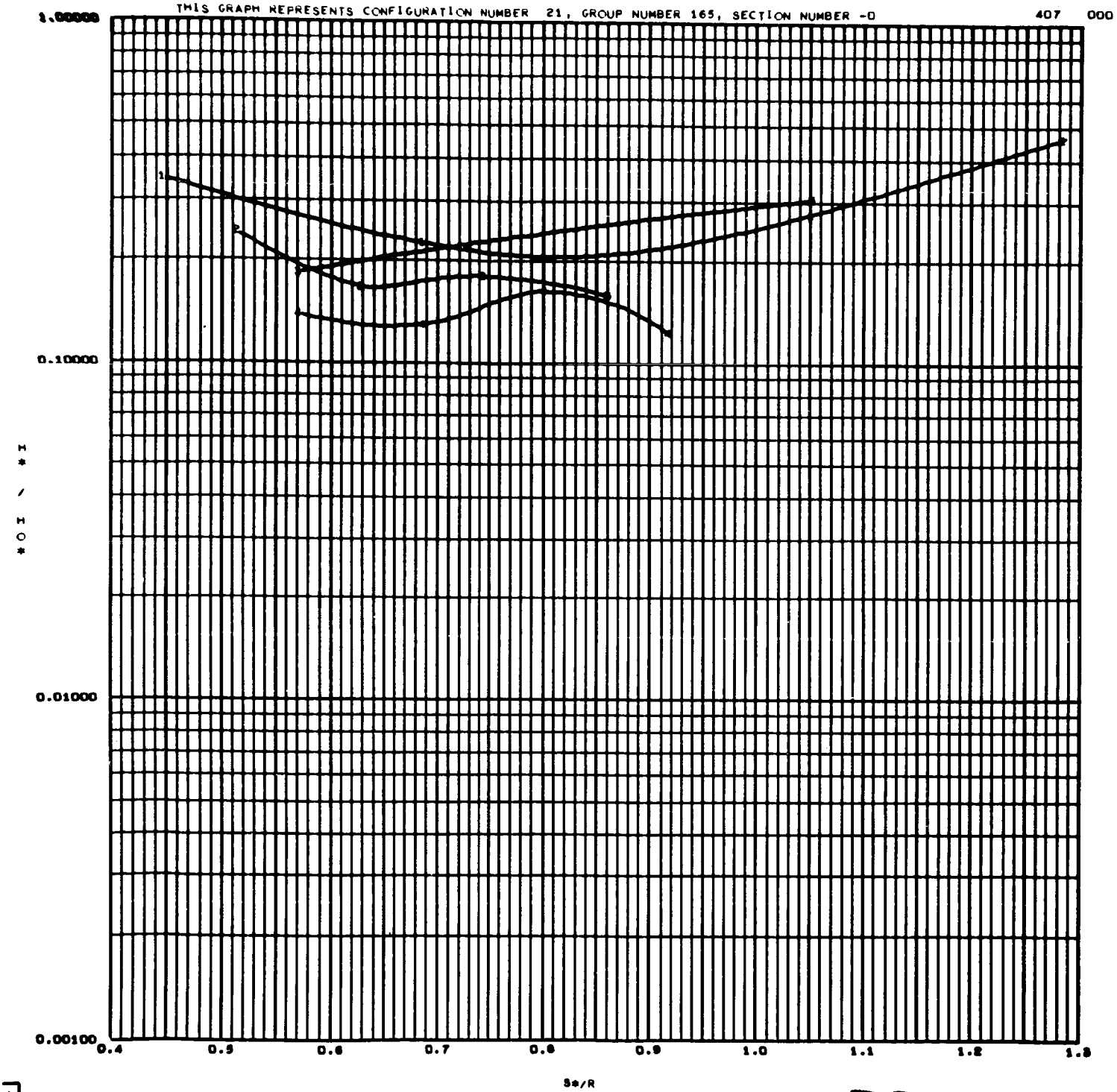
APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 165
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0548 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1727.60 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 165, SECTION NUMBER -0 407 000



[redacted]

[redacted]

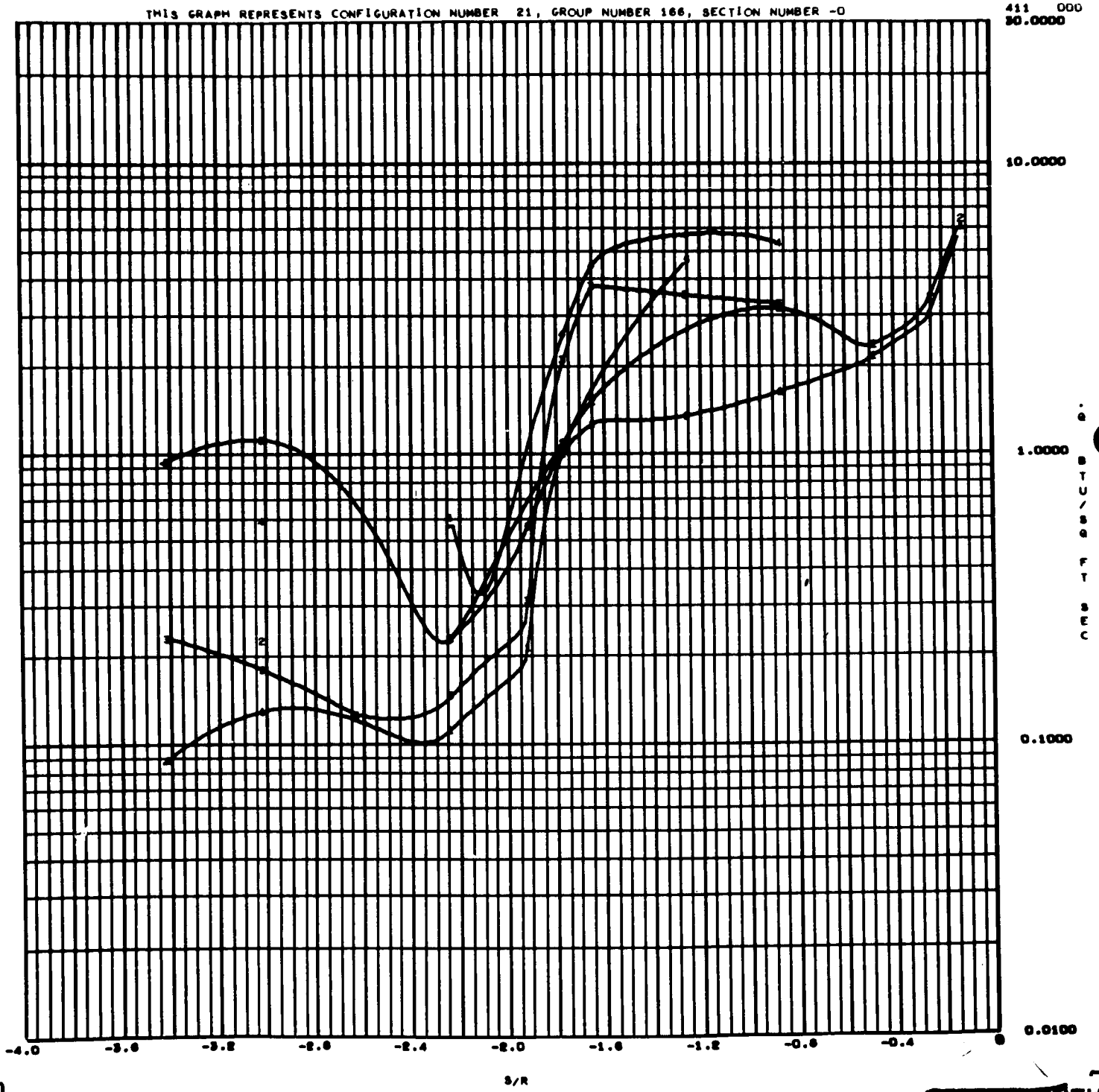
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 166
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.70 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

CONFIDENTIAL

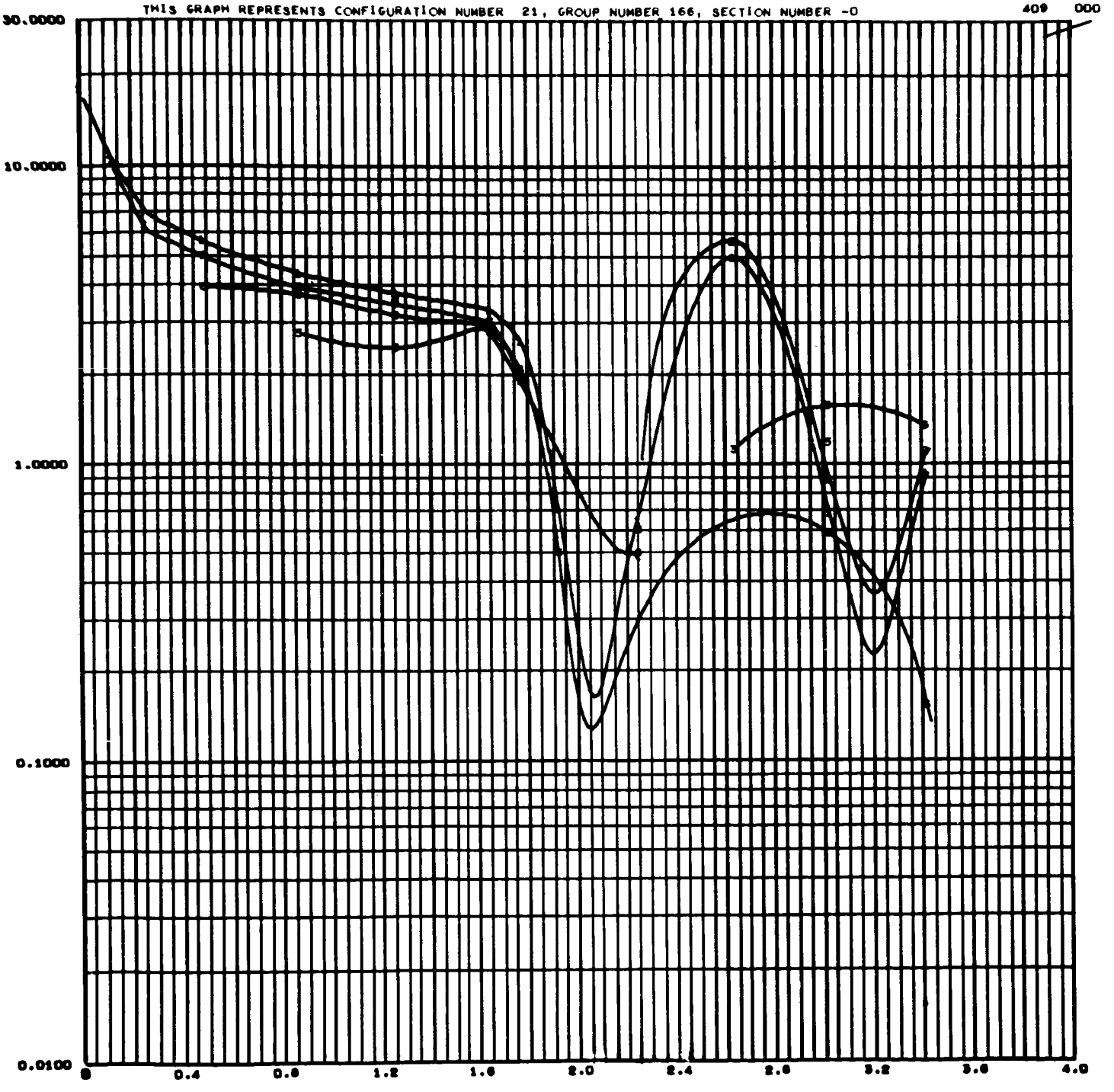
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 166
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.70 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

HEAT TRANSFER TEST

APOLLO

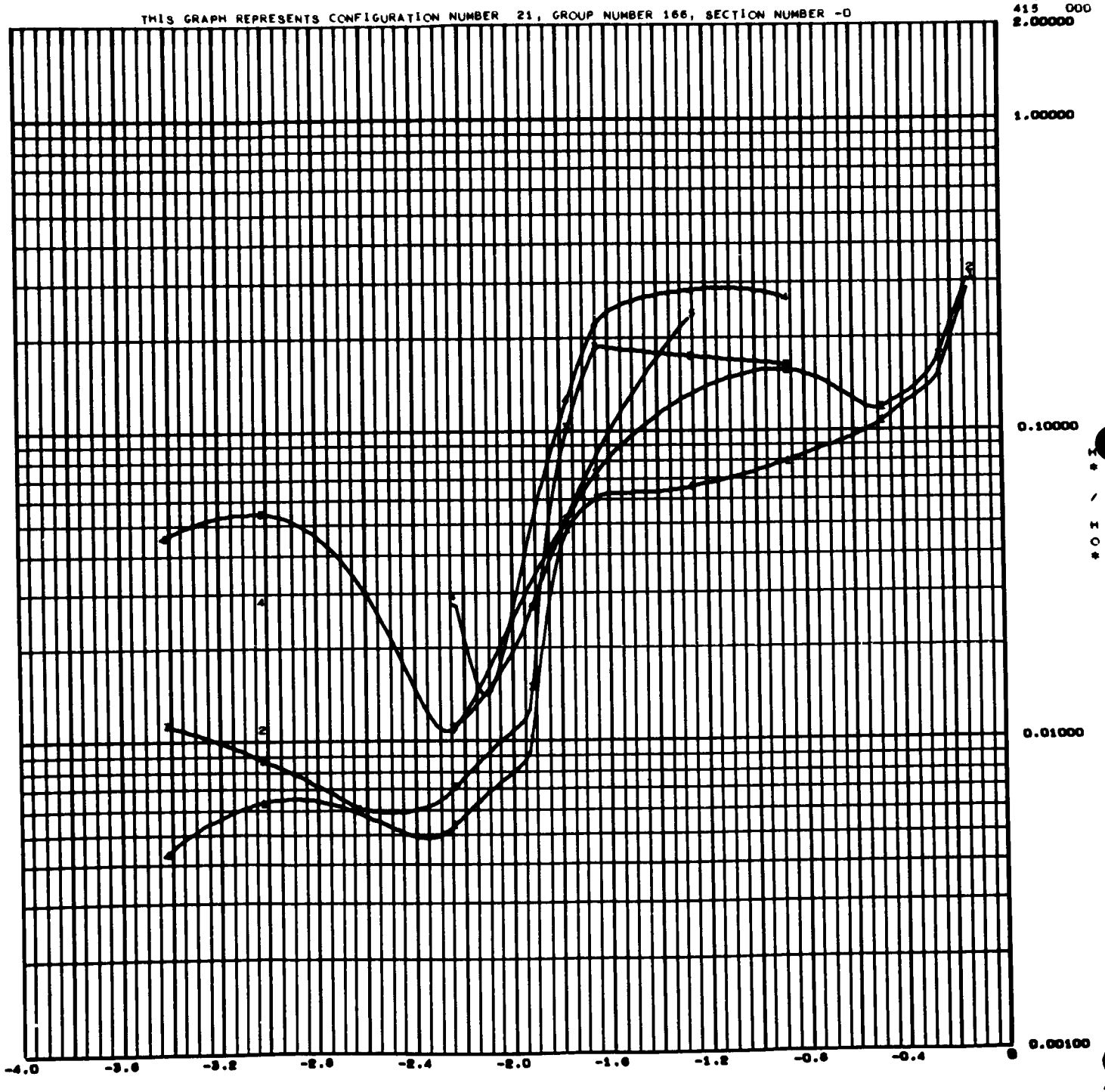
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 166
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.70 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11 L
415 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 166, SECTION NUMBER -0



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

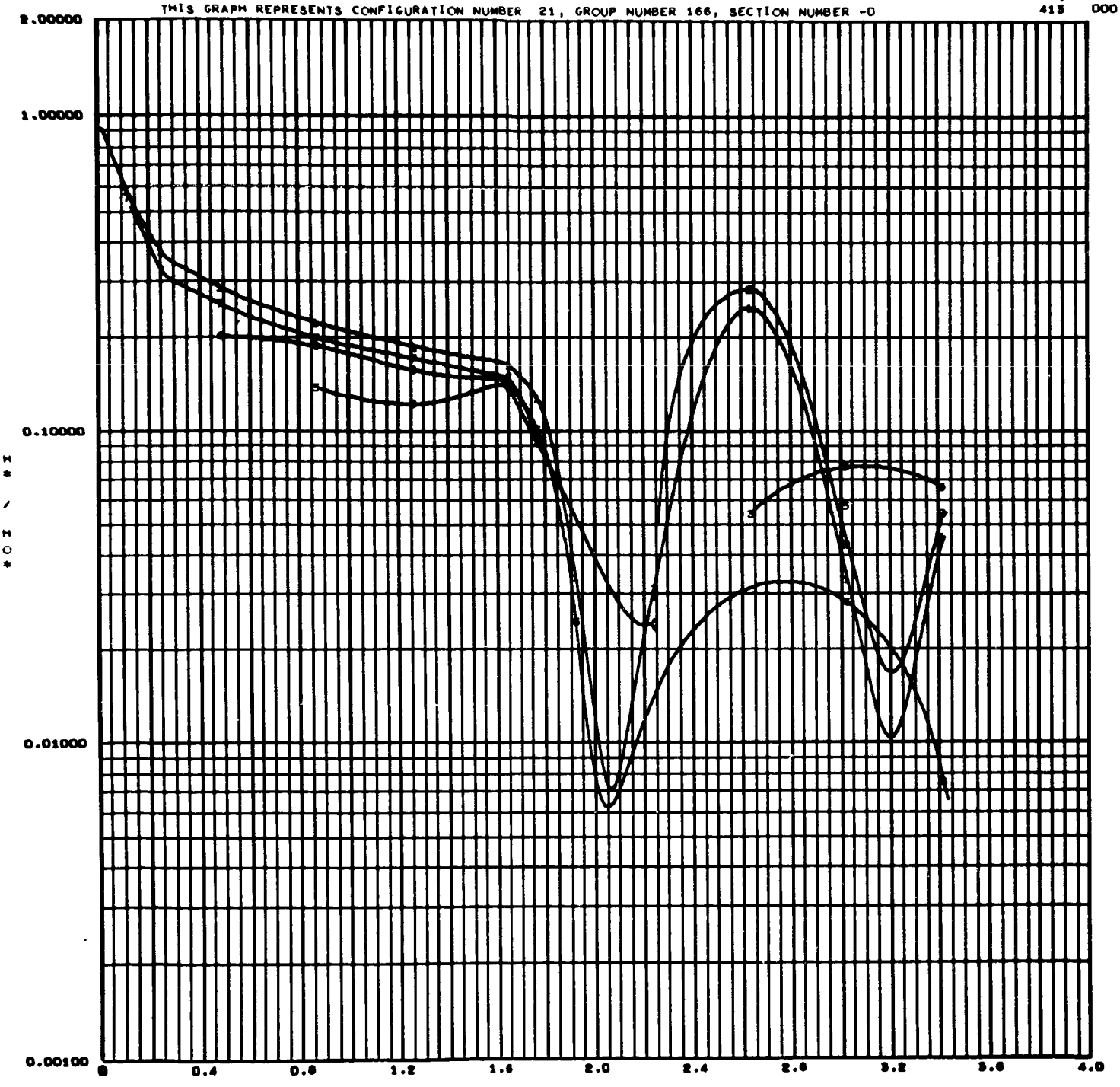
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 166
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.70 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4039-11
413 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 166, SECTION NUMBER -0



~~CONFIDENTIAL~~

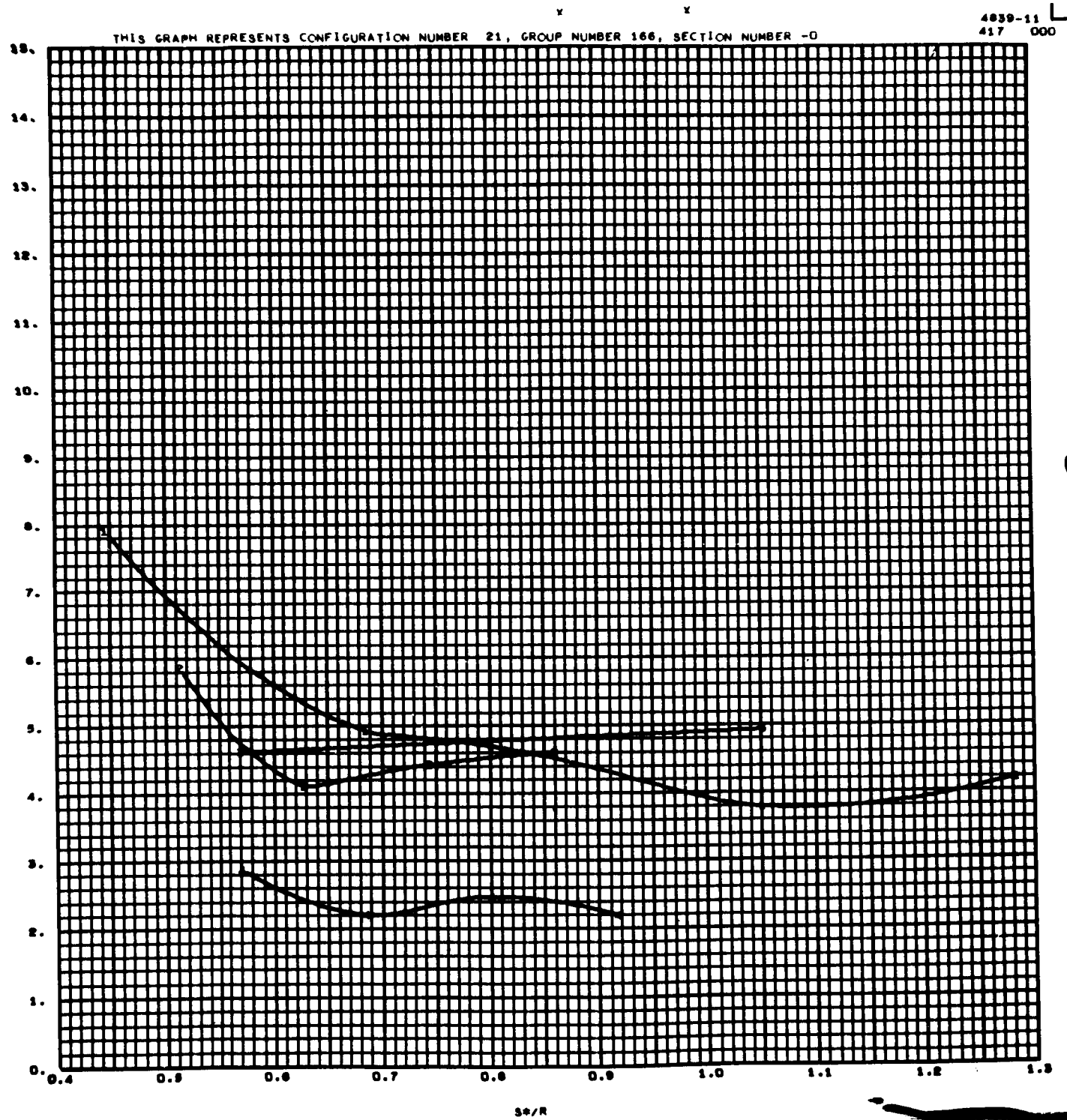
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 166
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_O* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.70 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA



~~CONFIDENTIAL~~

[redacted]

HEAT TRANSFER TEST

APOLLO

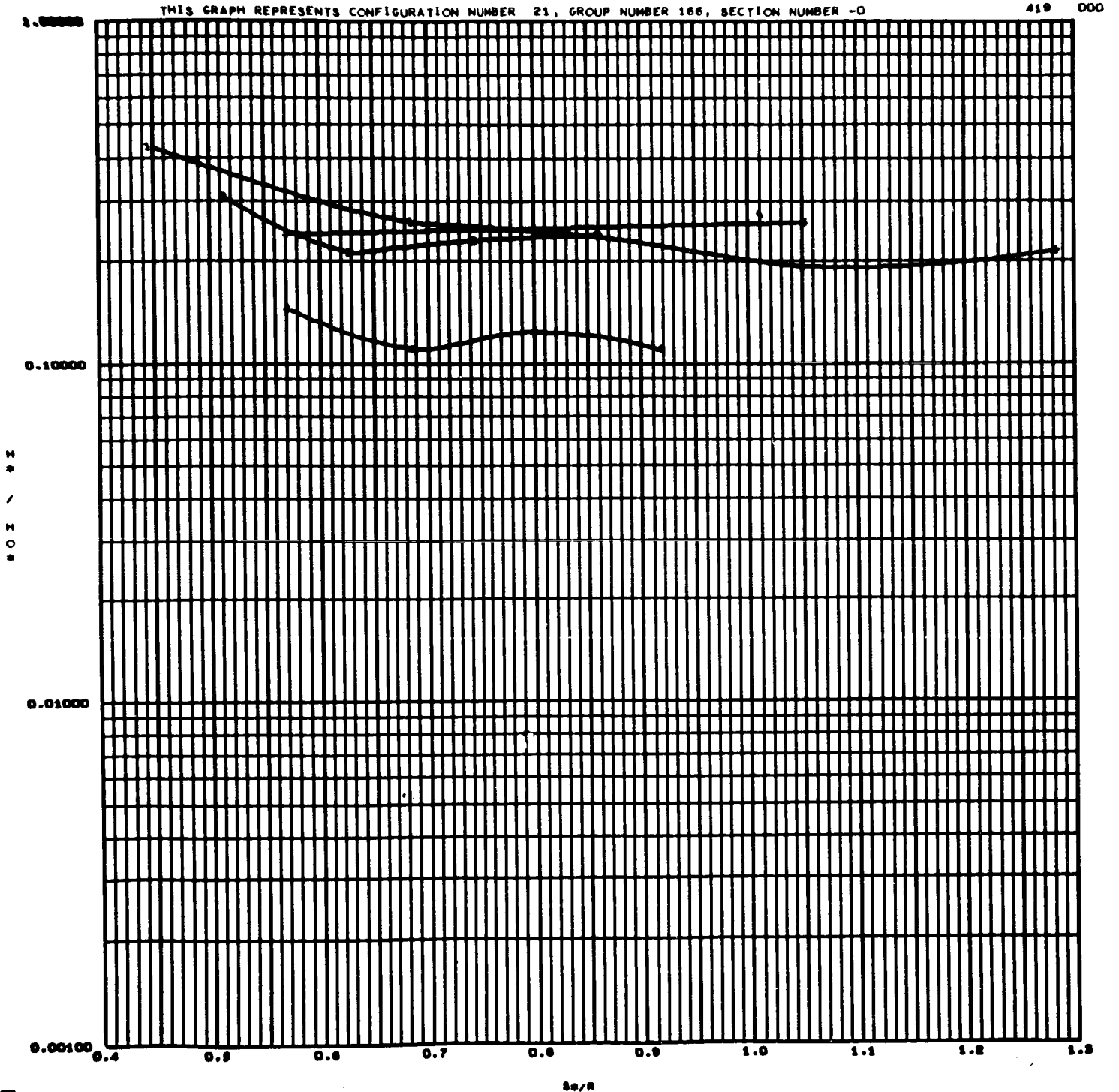
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 166
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0551 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.70 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-11
419 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 166, SECTION NUMBER -0



[redacted]

[redacted]

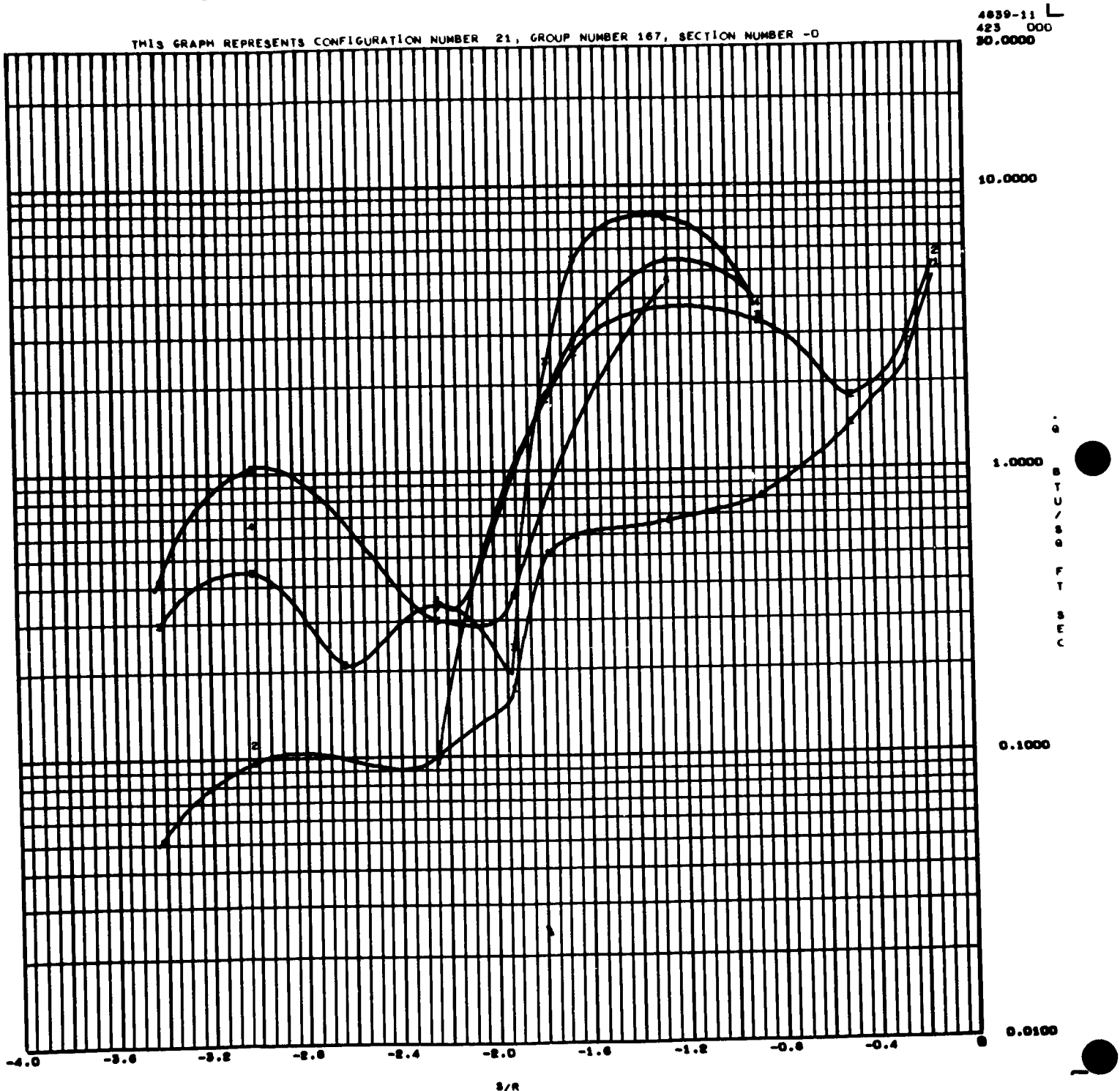
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 167
TOTAL PRESSURE 466.3 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

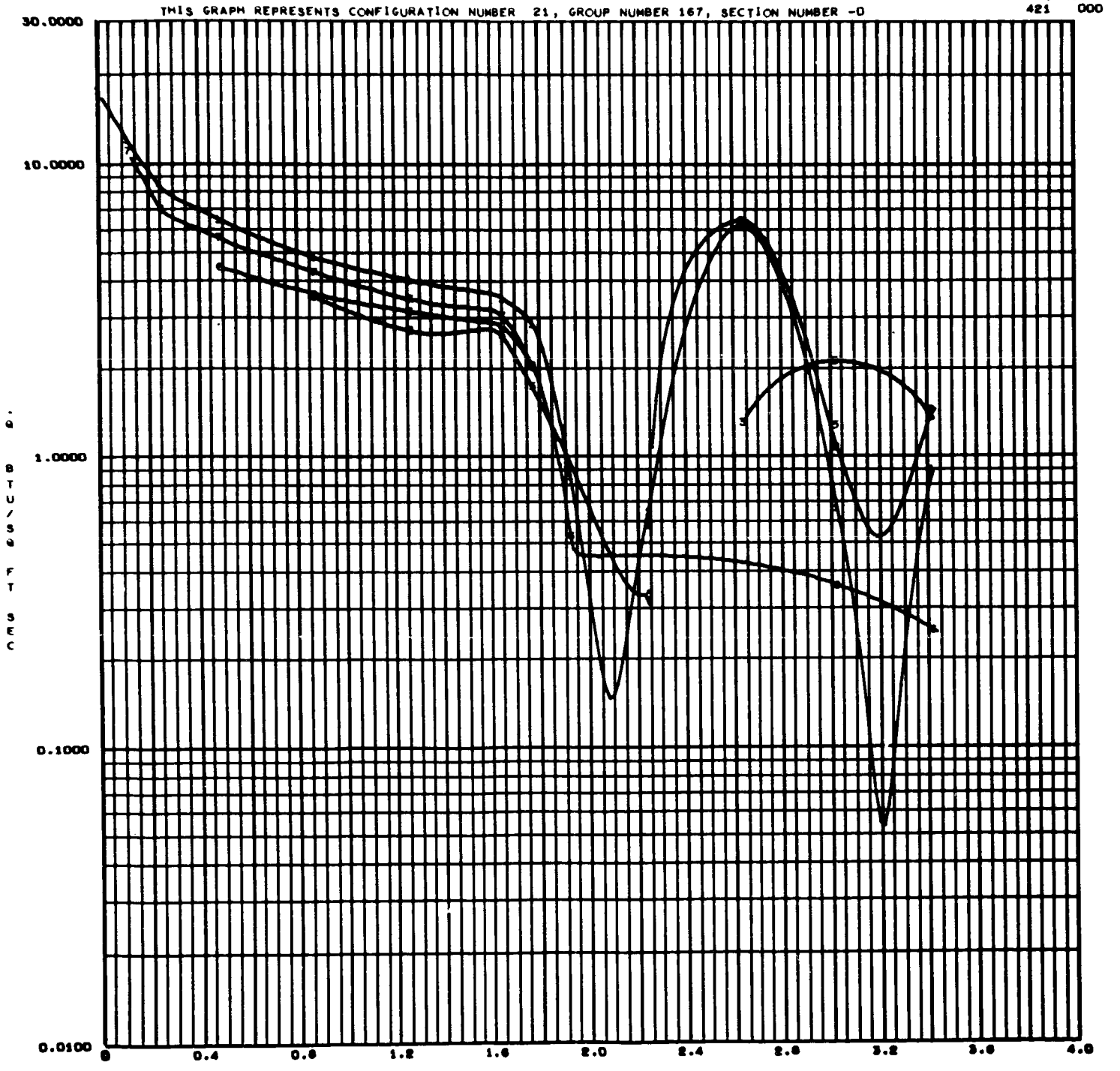
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 167
TOTAL PRESSURE 466.3 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4039-11
421 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 167, SECTION NUMBER -0



[redacted]

[redacted]

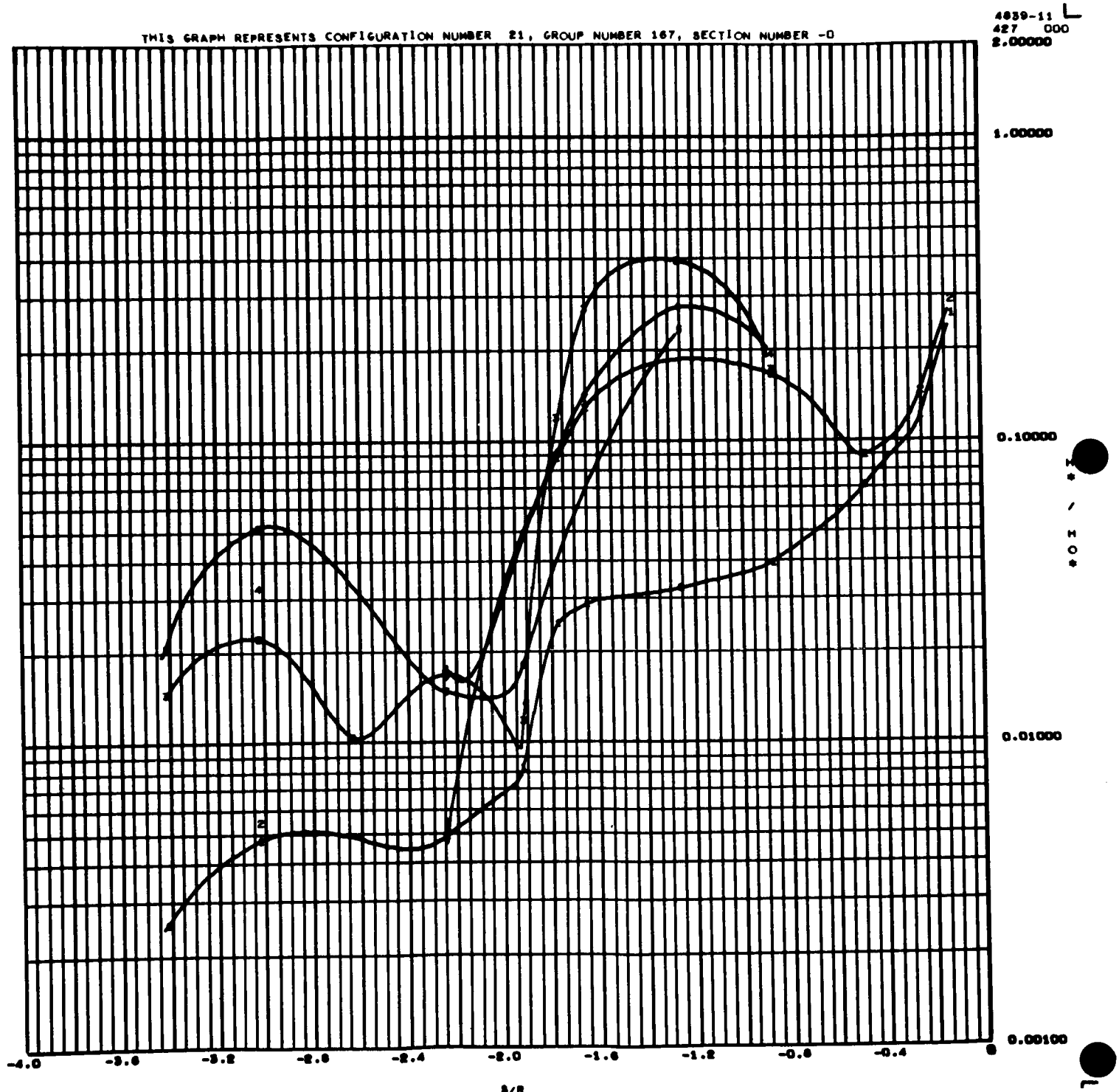
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 167
TOTAL PRESSURE 466.3 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

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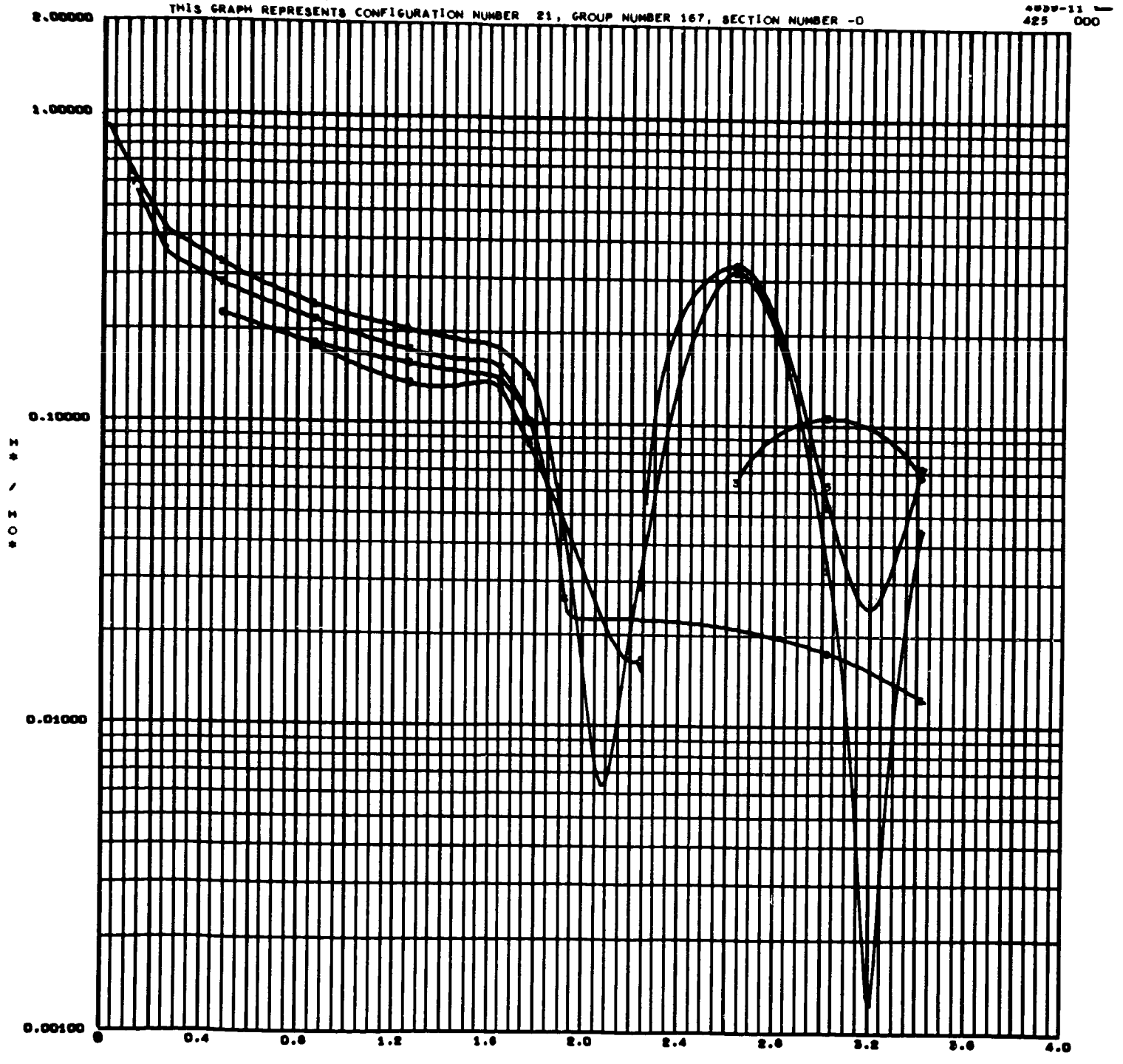
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 167
TOTAL PRESSURE 466.3 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

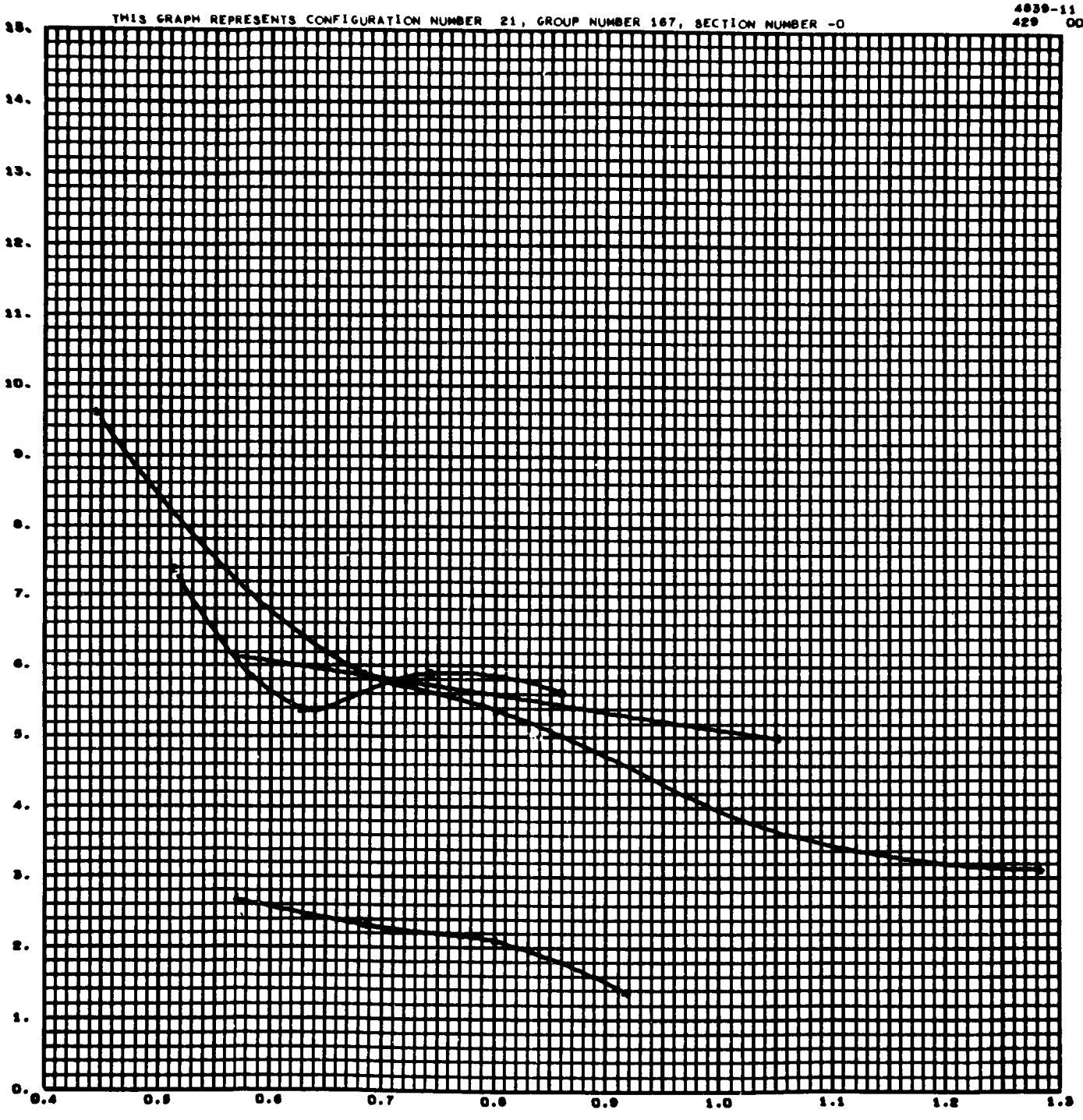
CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 167
TOTAL PRESSURE 466.3 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1723.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

X

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11 L
429 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 167, SECTION NUMBER -0



[redacted]

~~CONFIDENTIAL~~

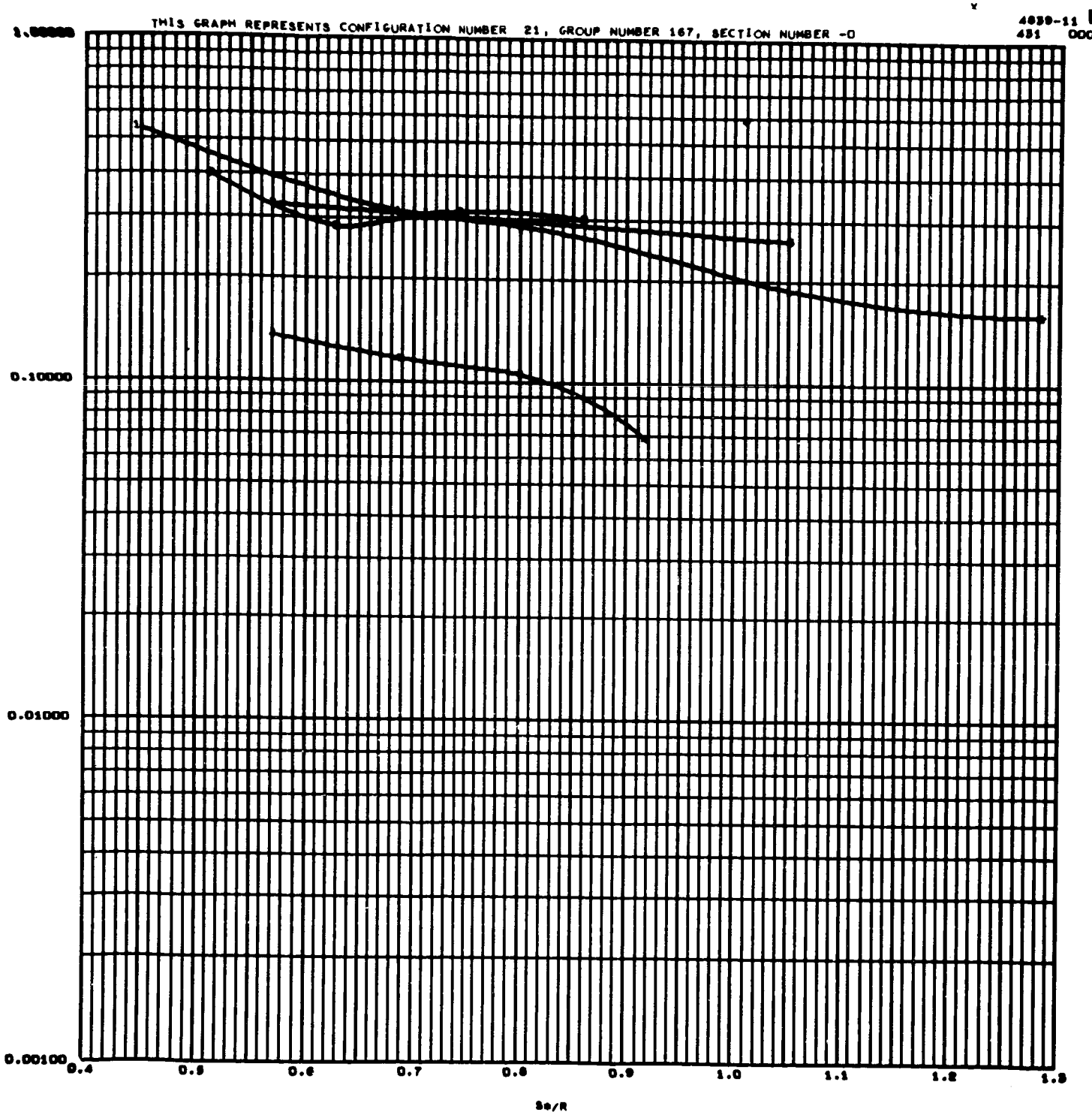
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.09
GROUP NO. 167
TOTAL PRESSURE 466.3 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
M_O^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1723.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



~~CONFIDENTIAL~~

[redacted]

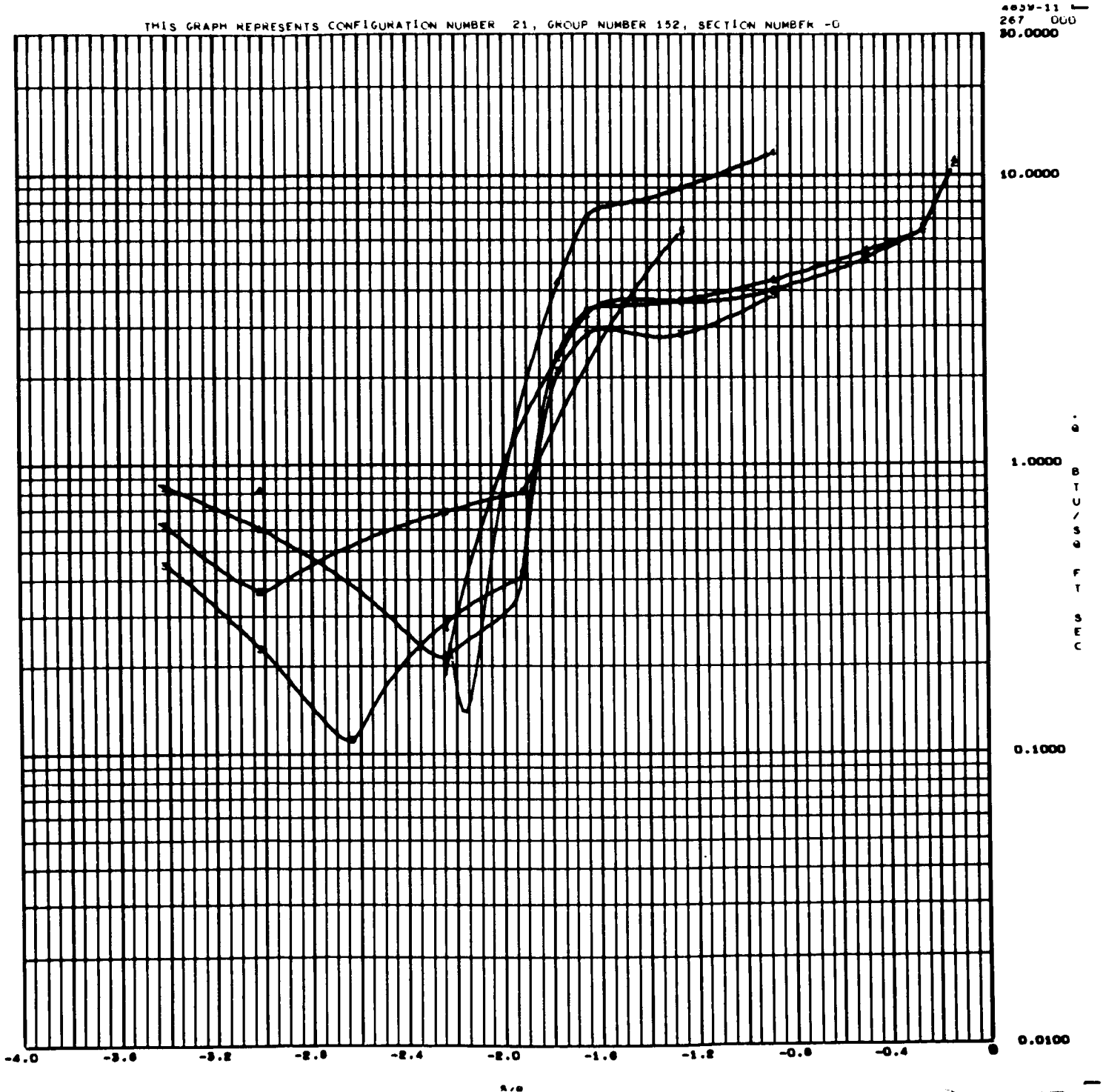
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 152
TOTAL PRESSURE 755.8 PSIA
REYNOLDS NUMBER PER INCH 0.0842 X 10^6
H_c * 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1789.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

CONFIDENTIAL

HEAT TRANSFER TEST

APOLLO

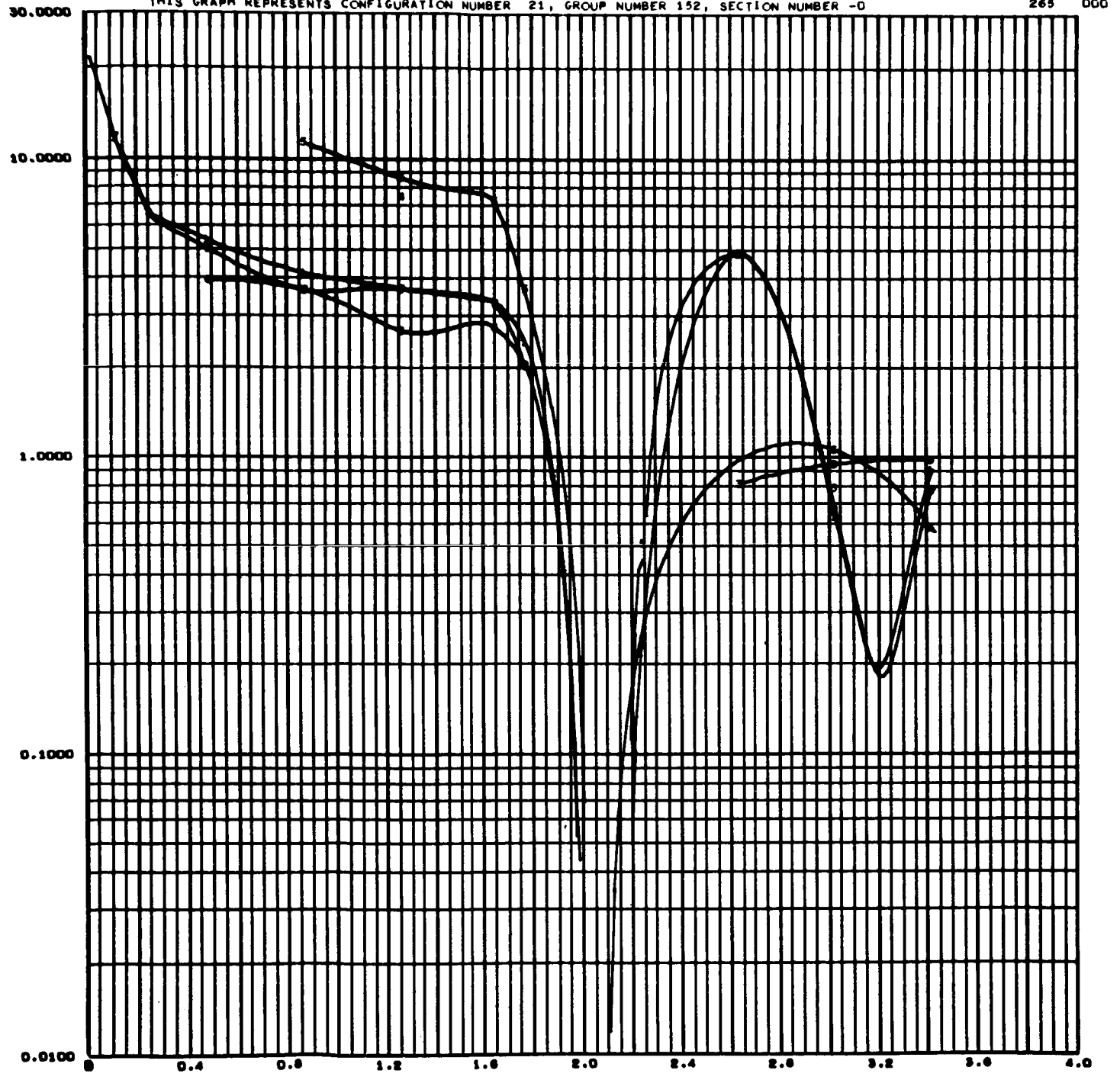
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 152
TOTAL PRESSURE 755.8 PSIA
REYNOLDS NUMBER PER INCH 0.0842 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
265 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 152, SECTION NUMBER -0



CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

APOLLO

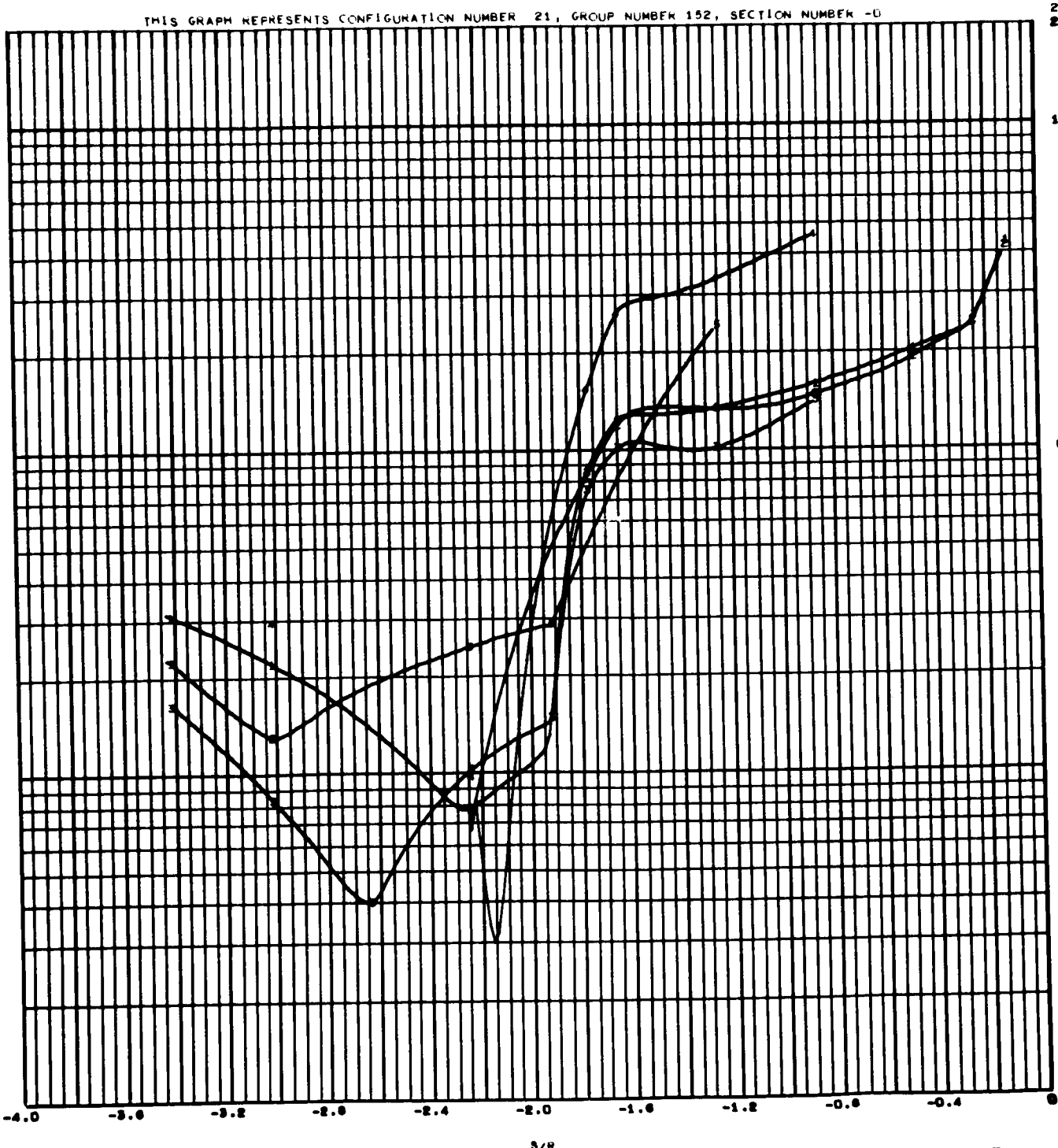
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 152
TOTAL PRESSURE 755.8 PSIA
REYNOLDS NUMBER PER INCH 0.0842 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11 L
271 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 152, SECTION NUMBER -0



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

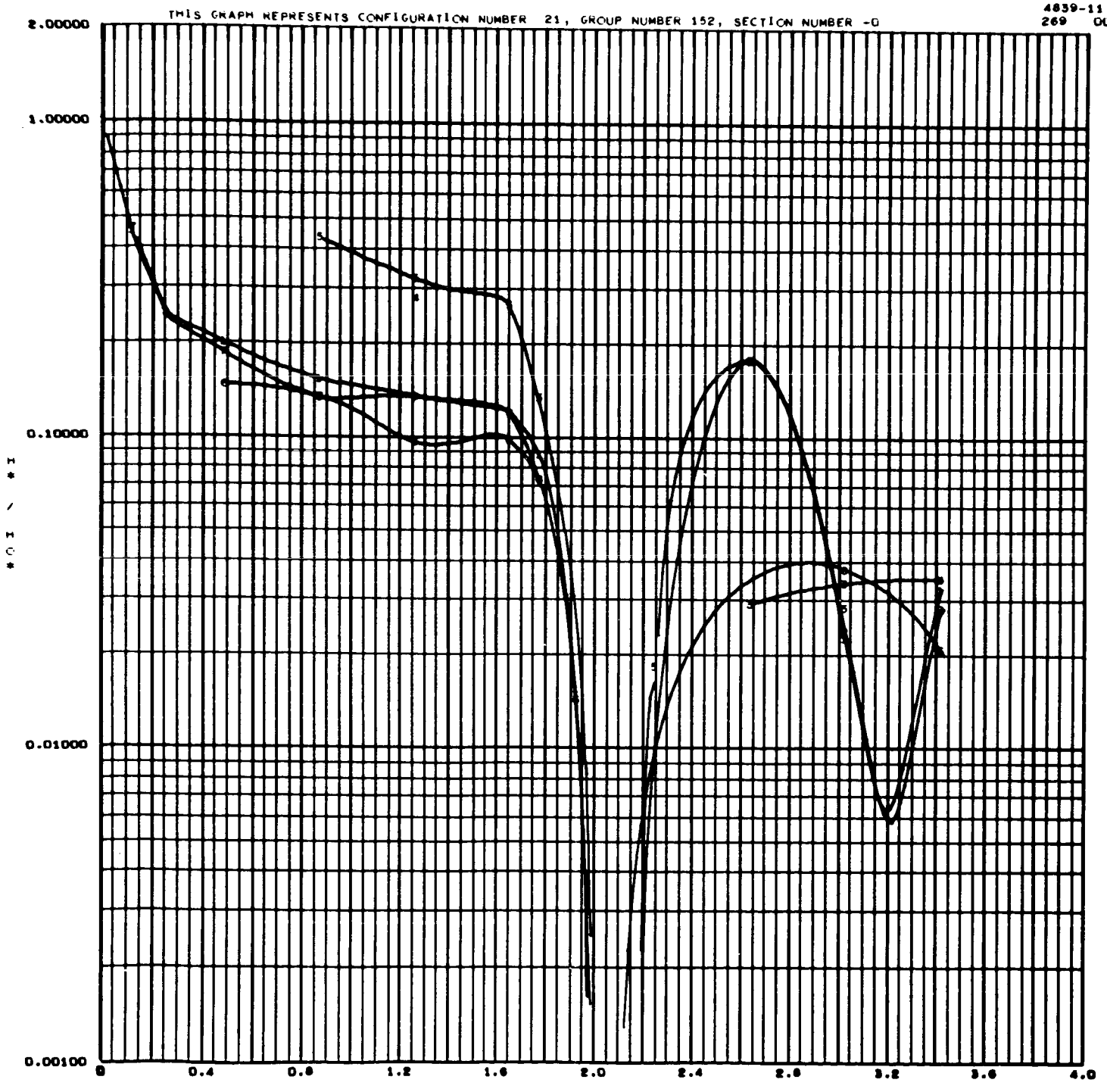
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 152
TOTAL PRESSURE 755.8 PSIA
REYNOLDS NUMBER PER INCH 0.0842 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
269 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 152, SECTION NUMBER -0



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

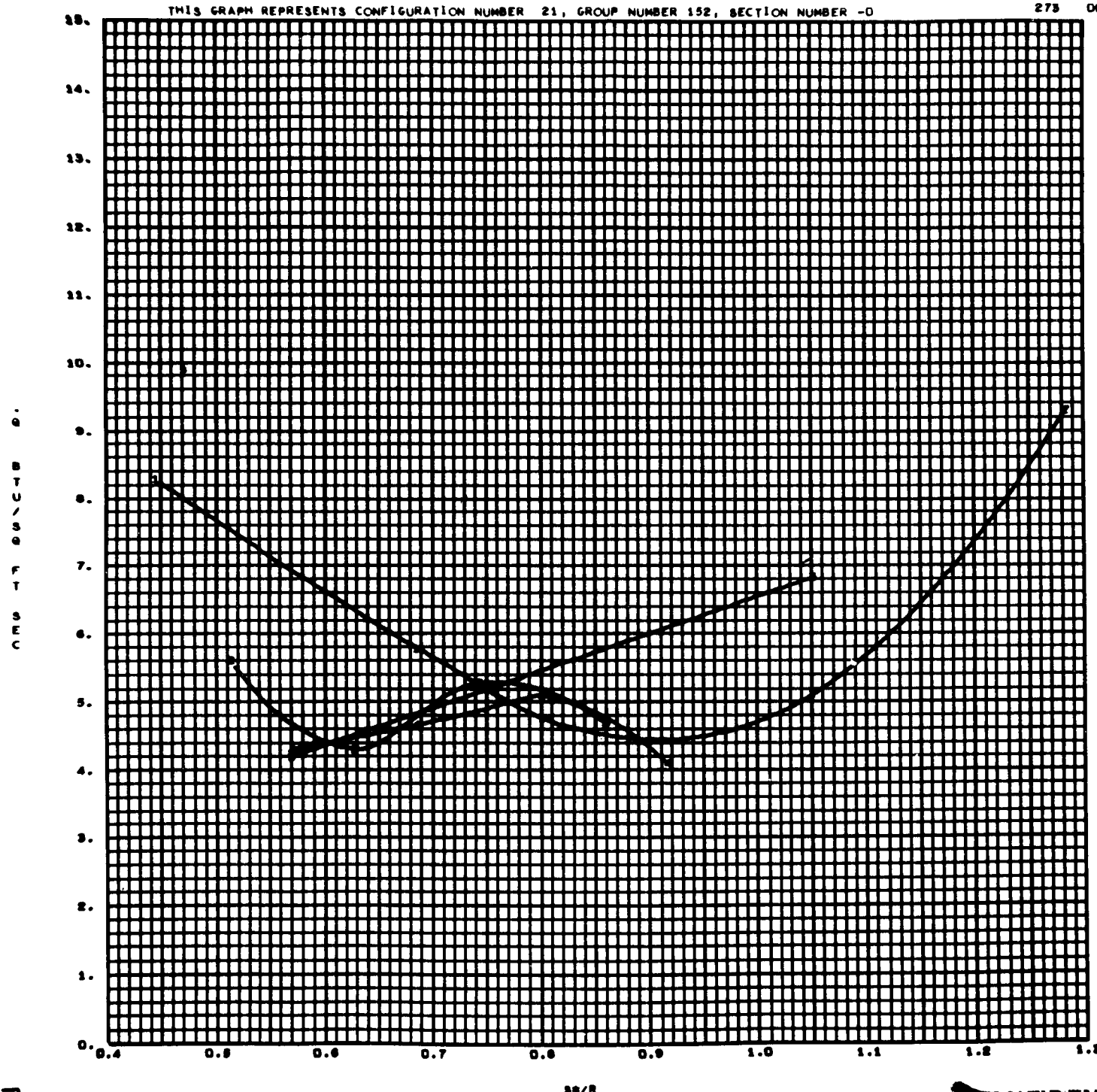
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 152
TOTAL PRESSURE 755.8 PSIA
REYNOLDS NUMBER PER INCH 0.0842 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
273 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 152, SECTION NUMBER -0



[redacted]

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HEAT TRANSFER TEST

APOLLO

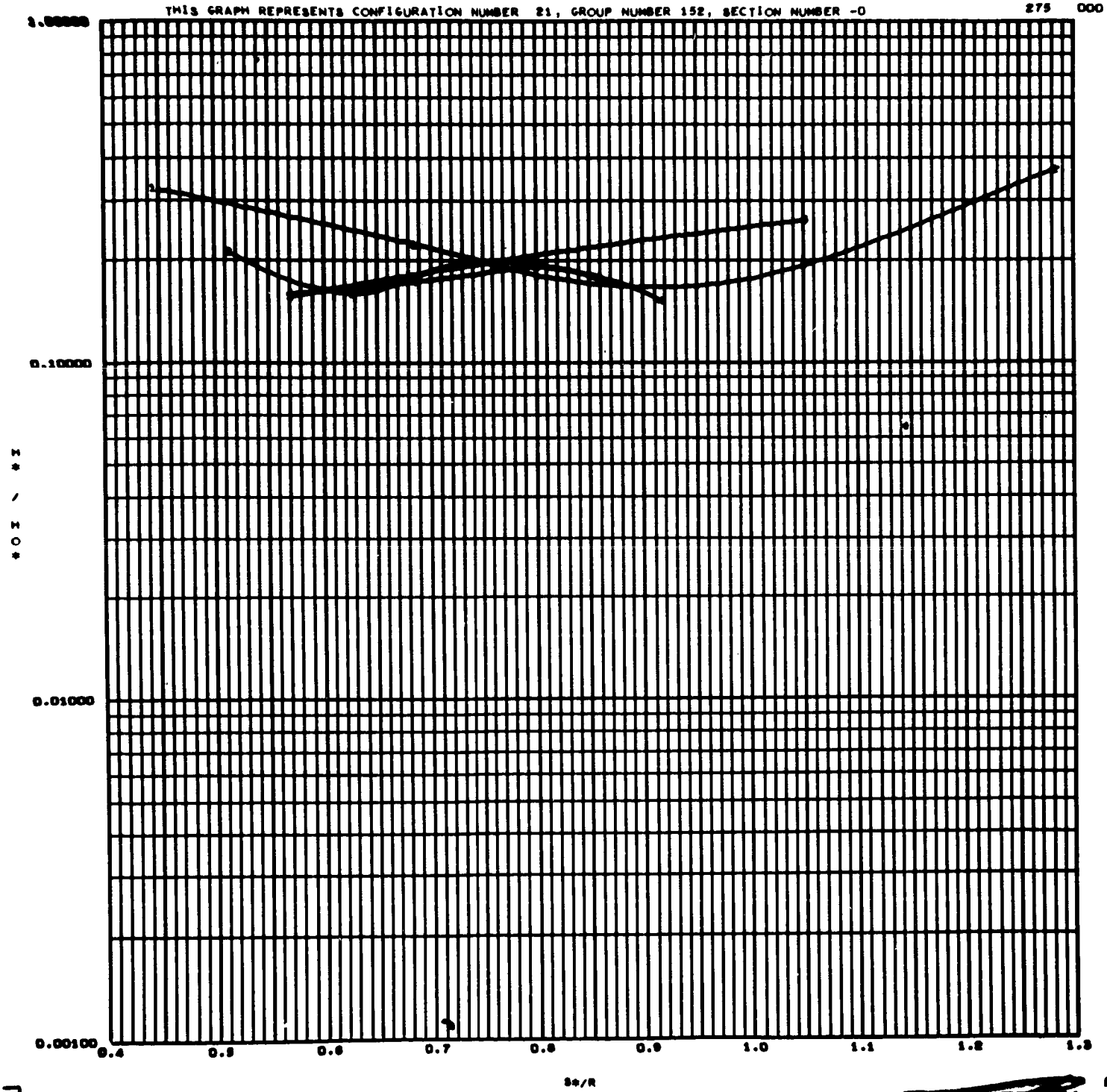
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 152
TOTAL PRESSURE 755.8 PSIA
REYNOLDS NUMBER PER INCH 0.0842 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1789.30 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 152, SECTION NUMBER -0

275 000



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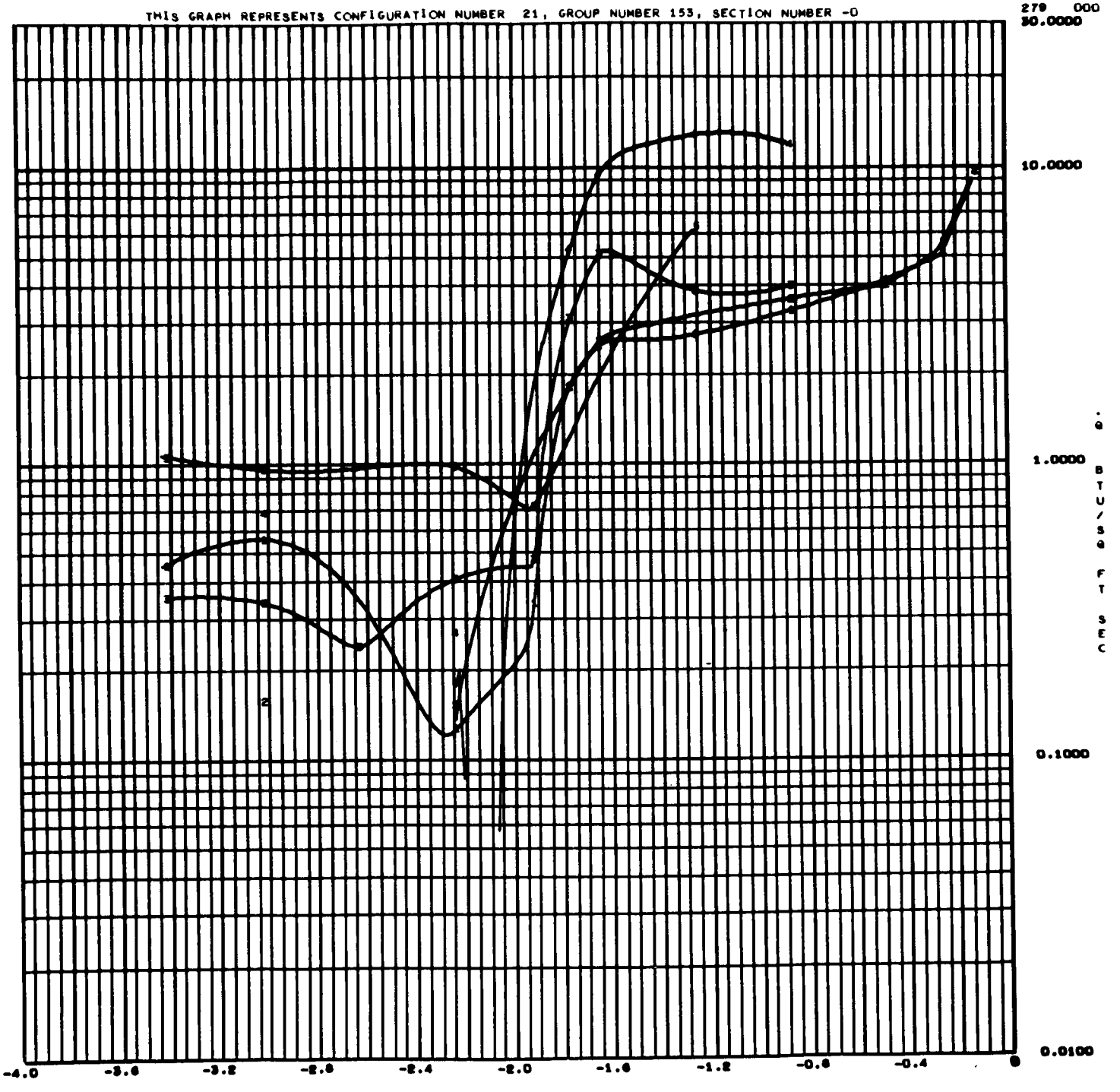
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 153
TOTAL PRESSURE 751.3 PSIA
REYNOLDS NUMBER PER INCH 0.0847 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

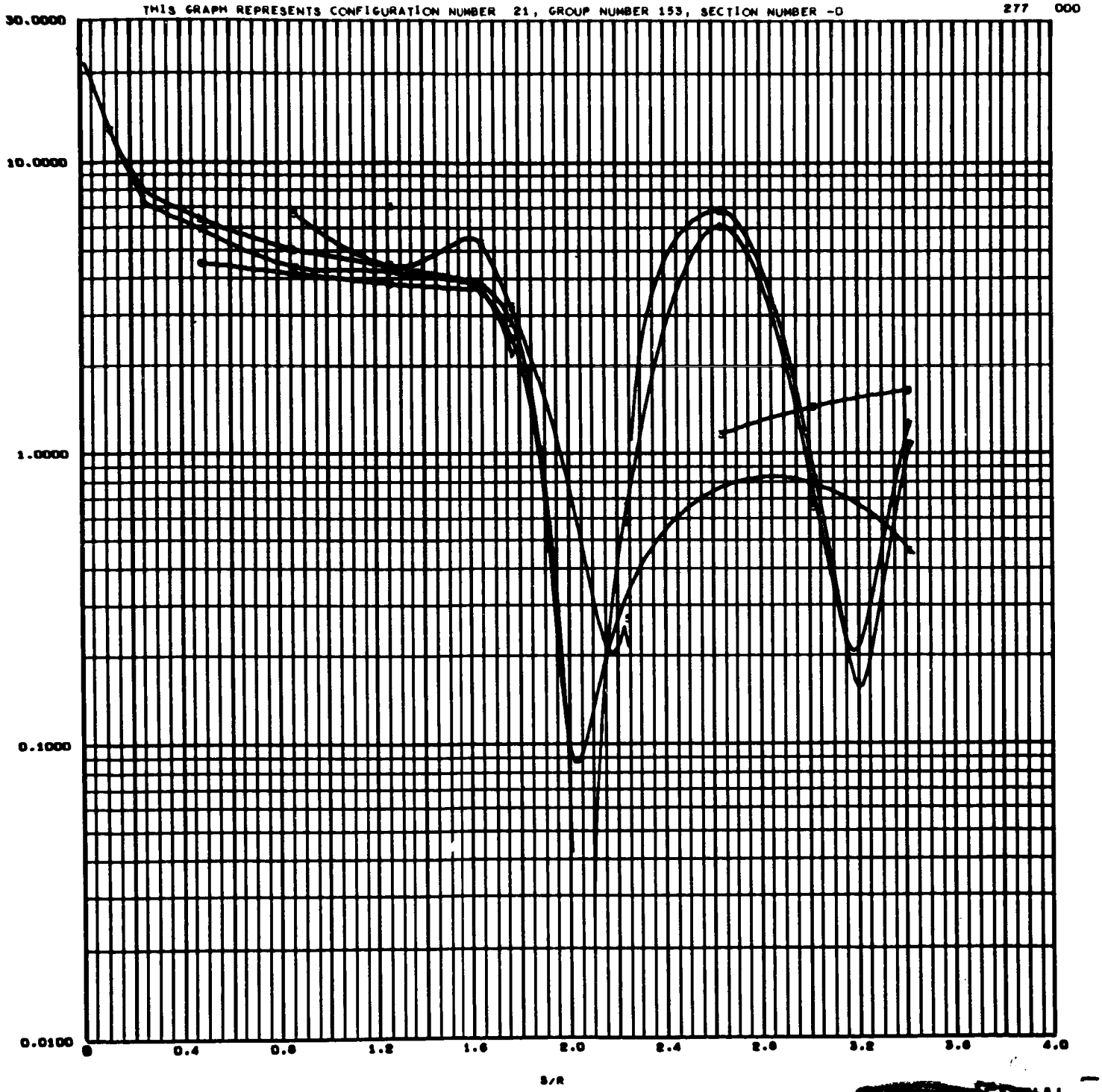
APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 153
TOTAL PRESSURE 751.3 PSIA
REYNOLDS NUMBER PER INCH 0.0847 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 153, SECTION NUMBER -0 277 000



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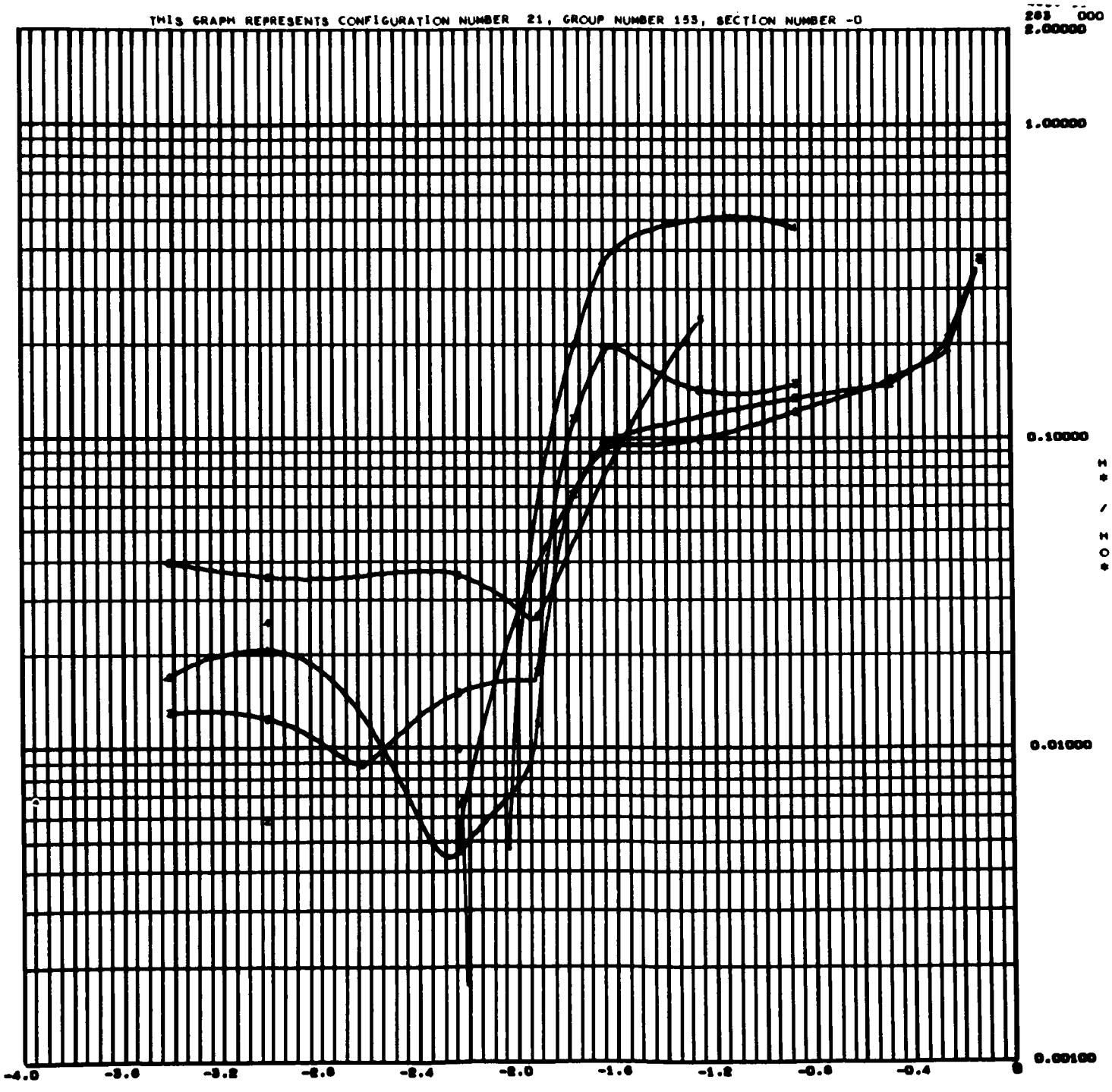
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 153
TOTAL PRESSURE 751.3 PSIA
REYNOLDS NUMBER PER INCH 0.0847 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1770.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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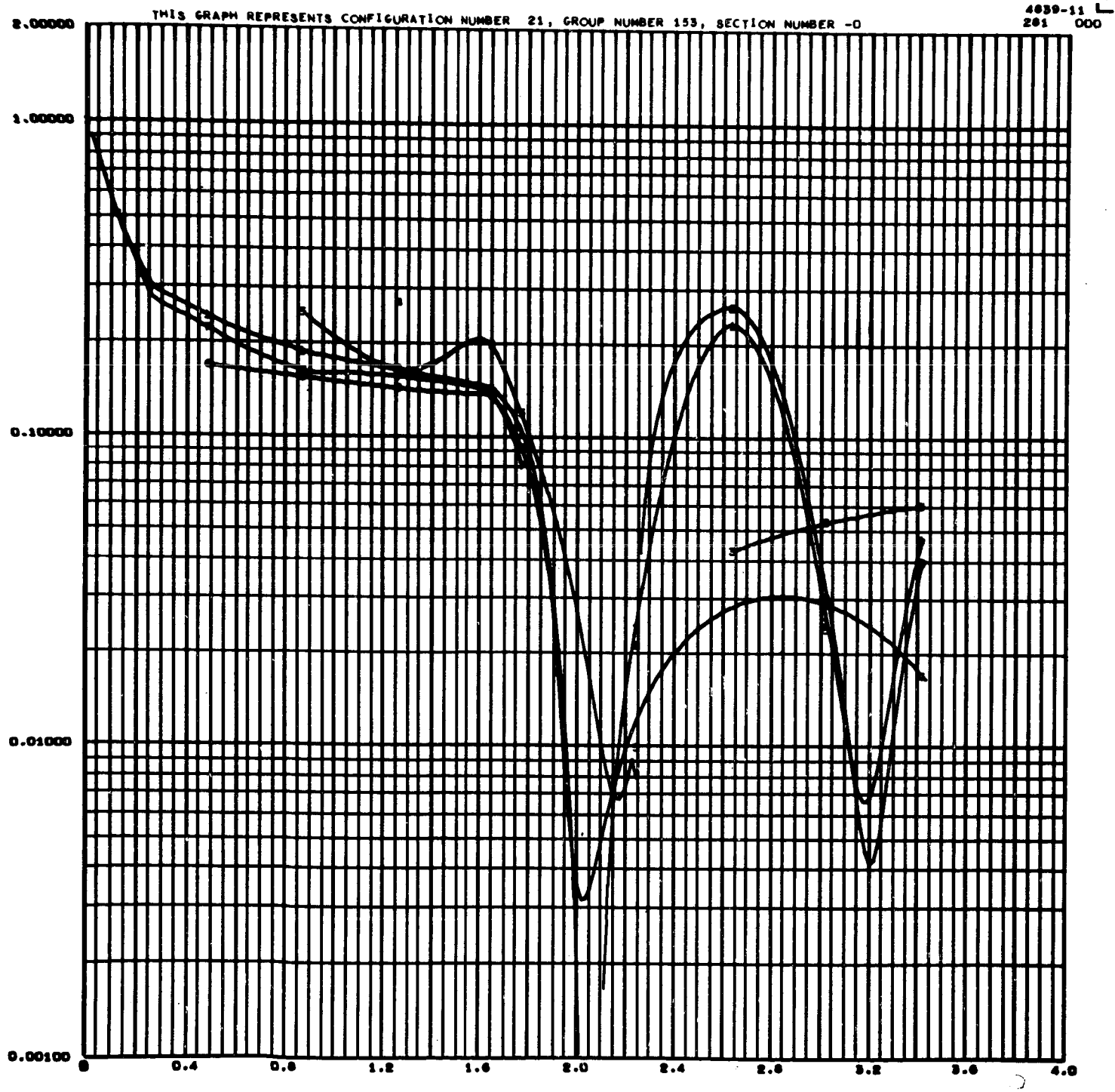
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 153
TOTAL PRESSURE 751.3 PSIA
REYNOLDS NUMBER PER INCH 0.0847 x 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

HEAT TRANSFER TEST

APOLLO

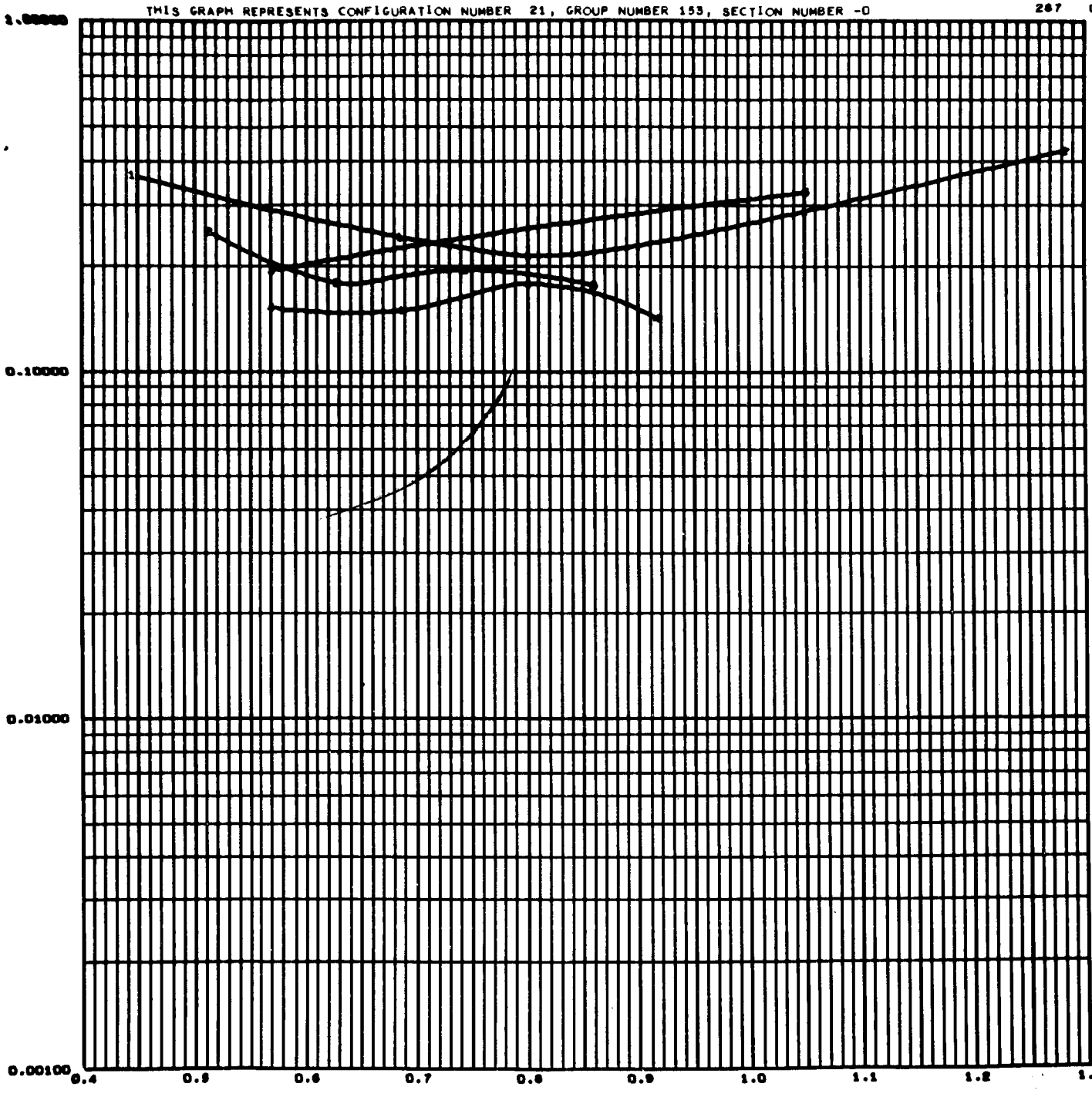
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 153
TOTAL PRESSURE 751.3 PSIA
REYNOLDS NUMBER PER INCH 0.0847 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
287 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 153, SECTION NUMBER -0



[redacted]

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HEAT TRANSFER TEST

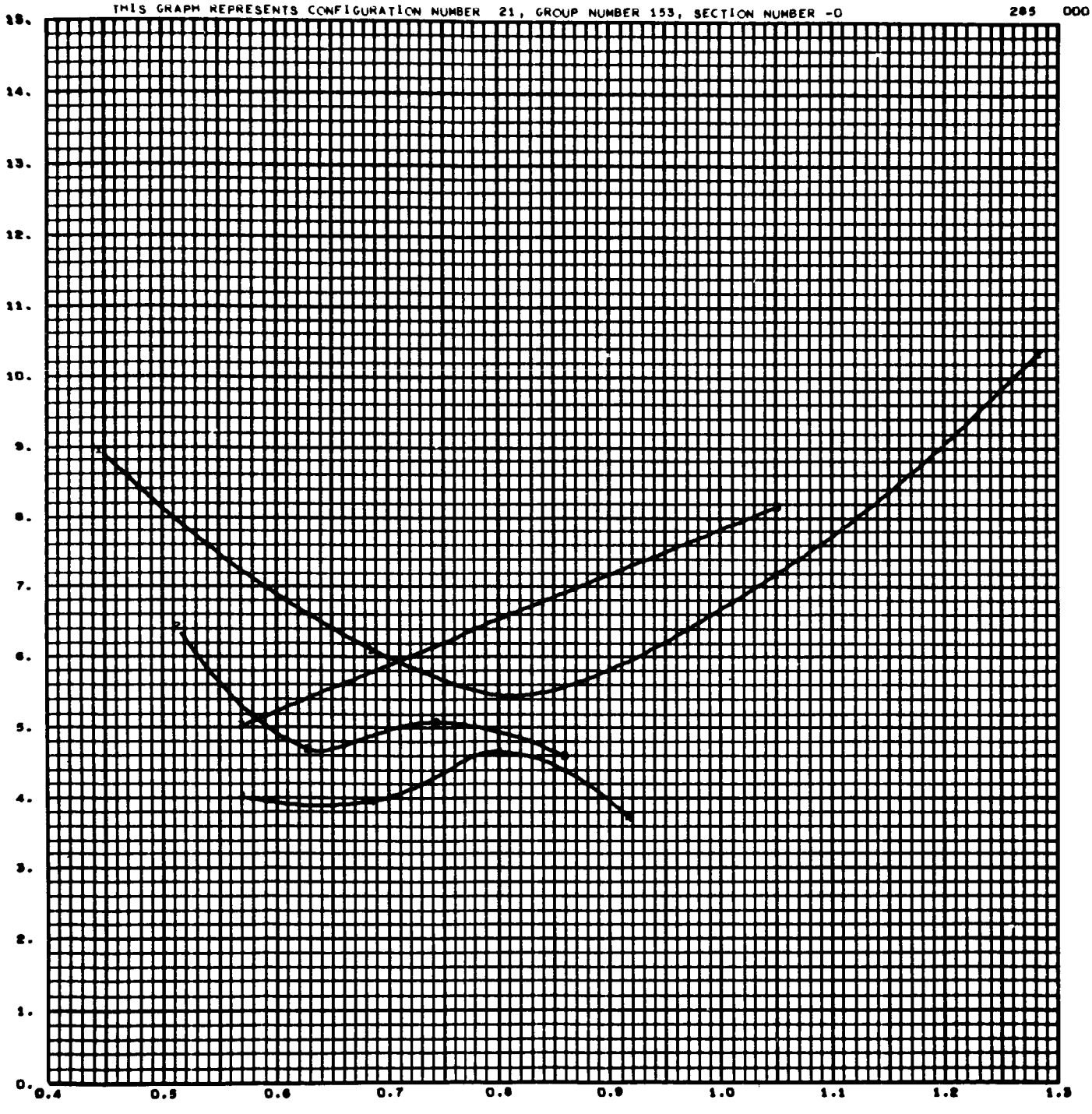
APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 153
TOTAL PRESSURE 751.3 PSIA
REYNOLDS NUMBER PER INCH 0.0847 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1778.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 153, SECTION NUMBER -0 285 000



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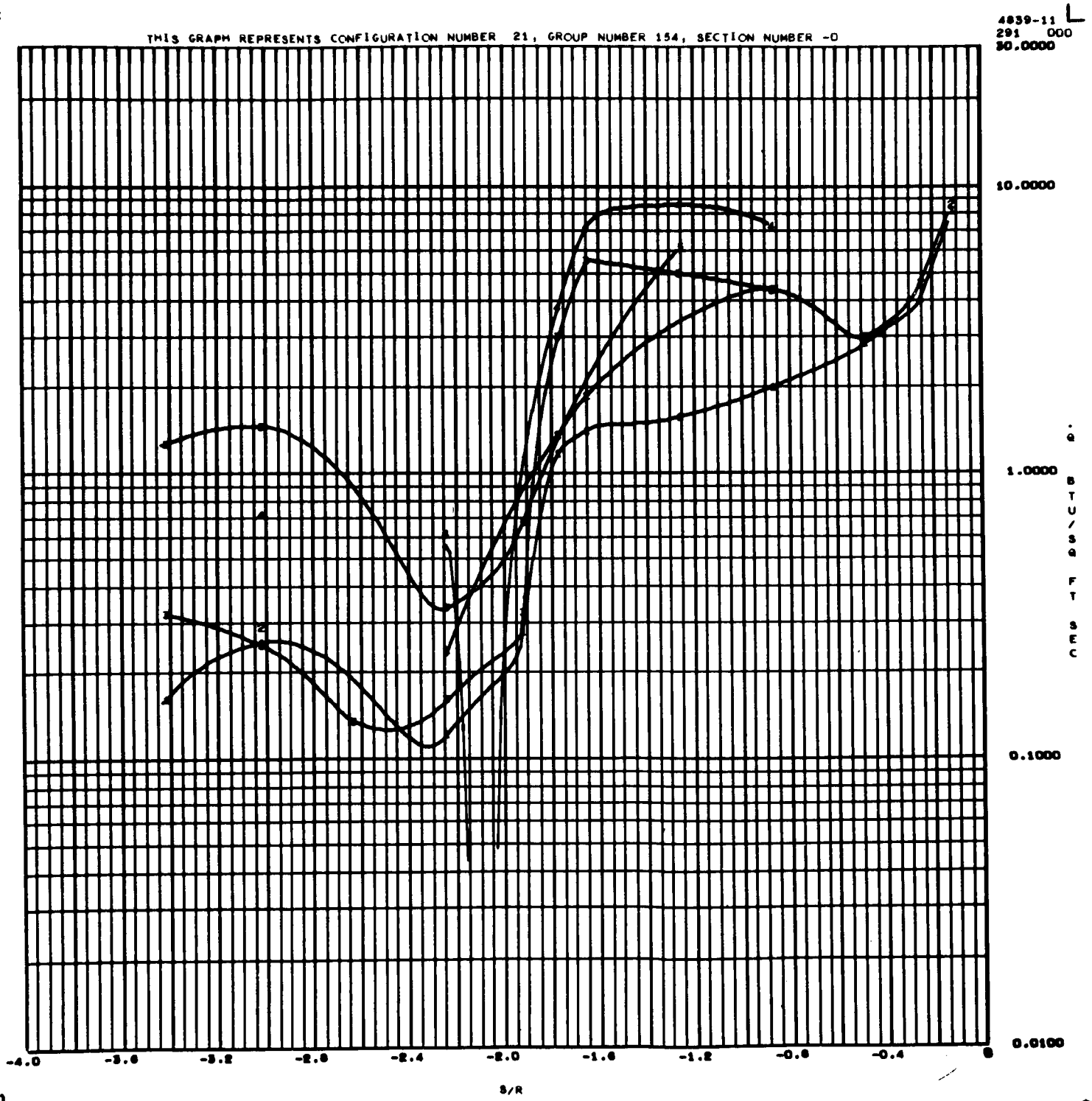
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 154
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0848 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1779.90 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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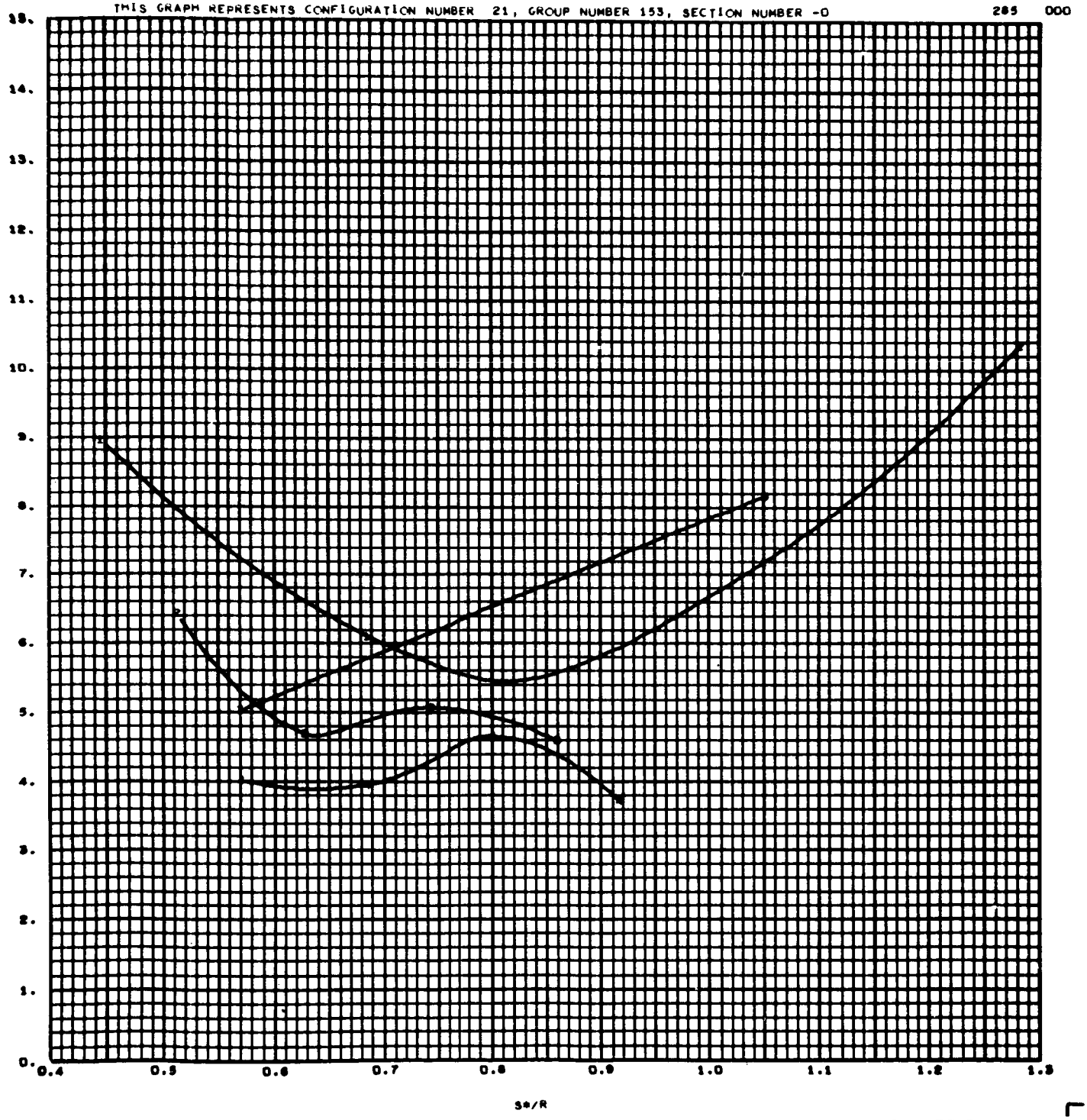
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 153
TOTAL PRESSURE 751.3 PSIA
REYNOLDS NUMBER PER INCH 0.0847 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1778.20 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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[redacted]

HEAT TRANSFER TEST

APOLLO

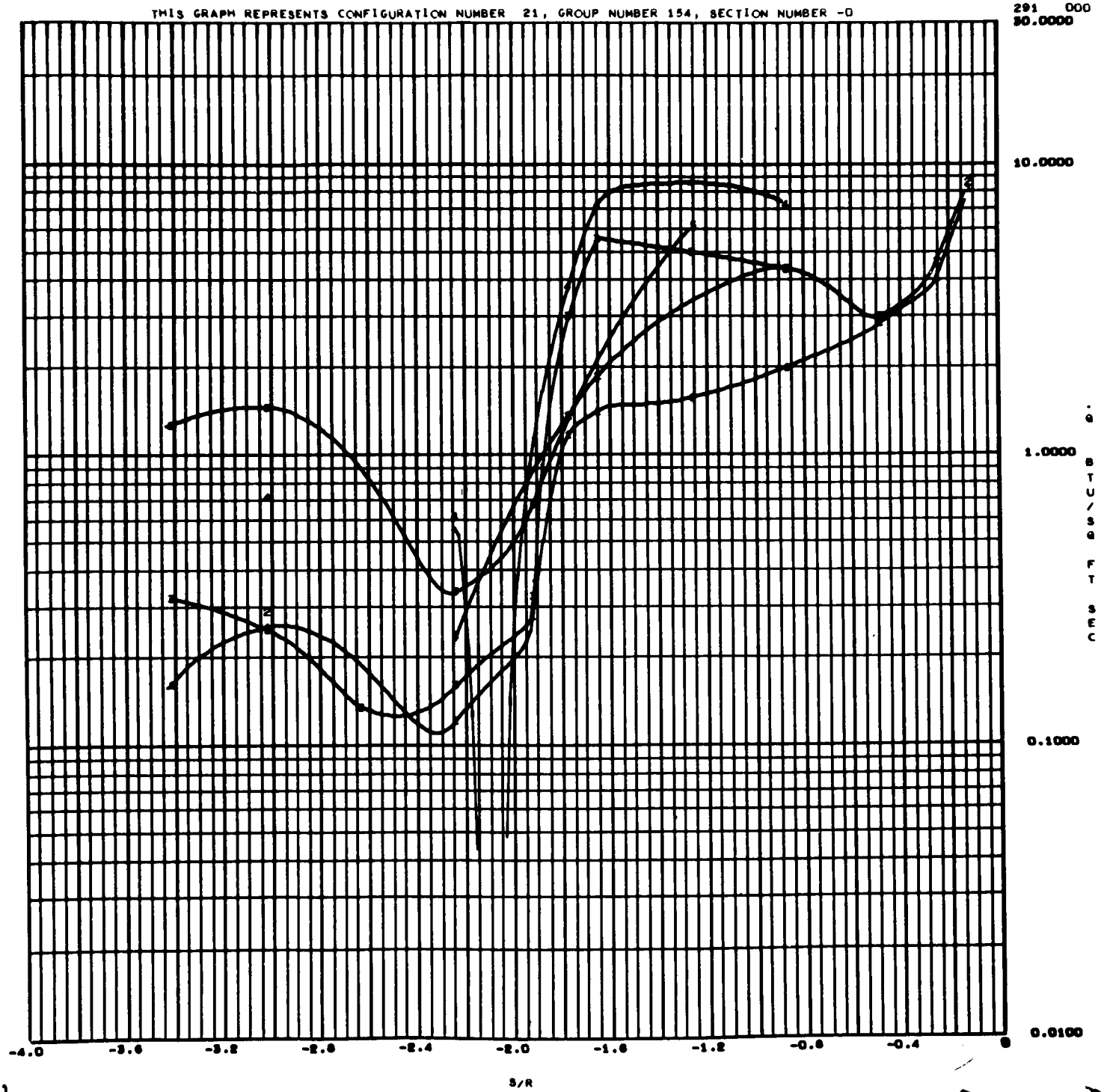
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 154
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0848 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1779.90 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 154, SECTION NUMBER -0

4839-11
291 000



[redacted]

[redacted]

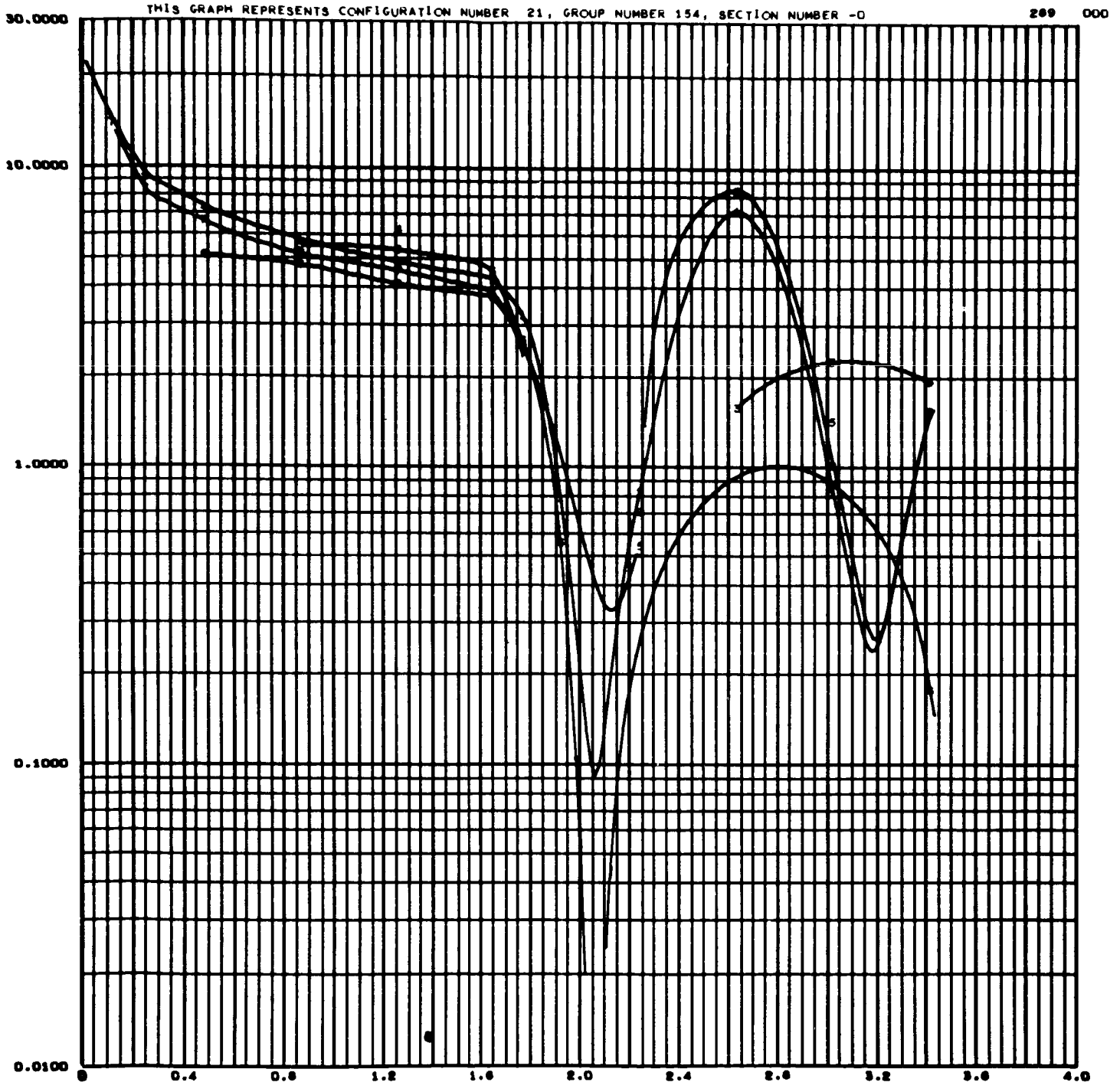
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 154
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0848 X 10^6
H_O^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1779.90 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

[redacted]

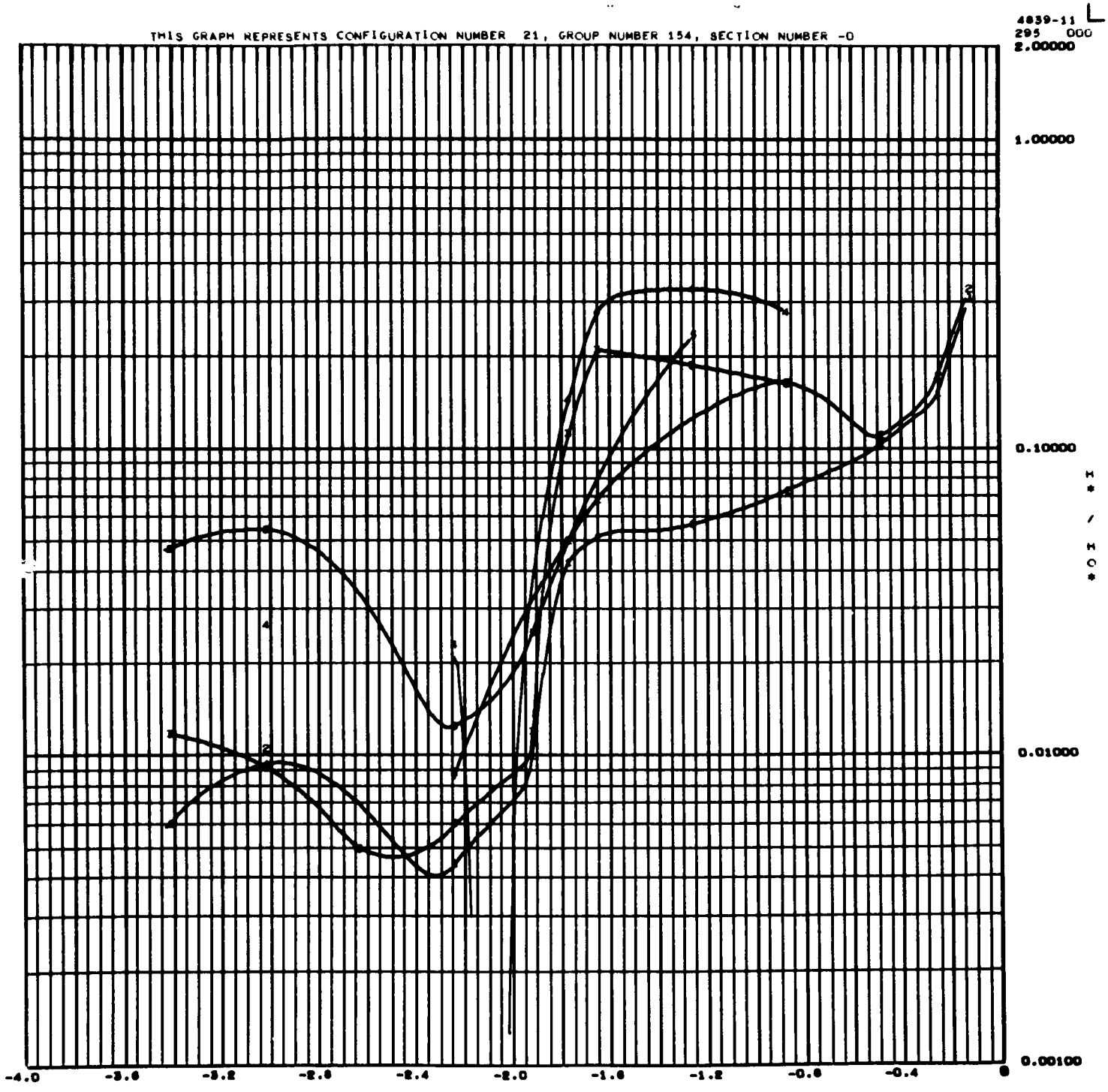
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 154
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0848 x 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1779.90 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

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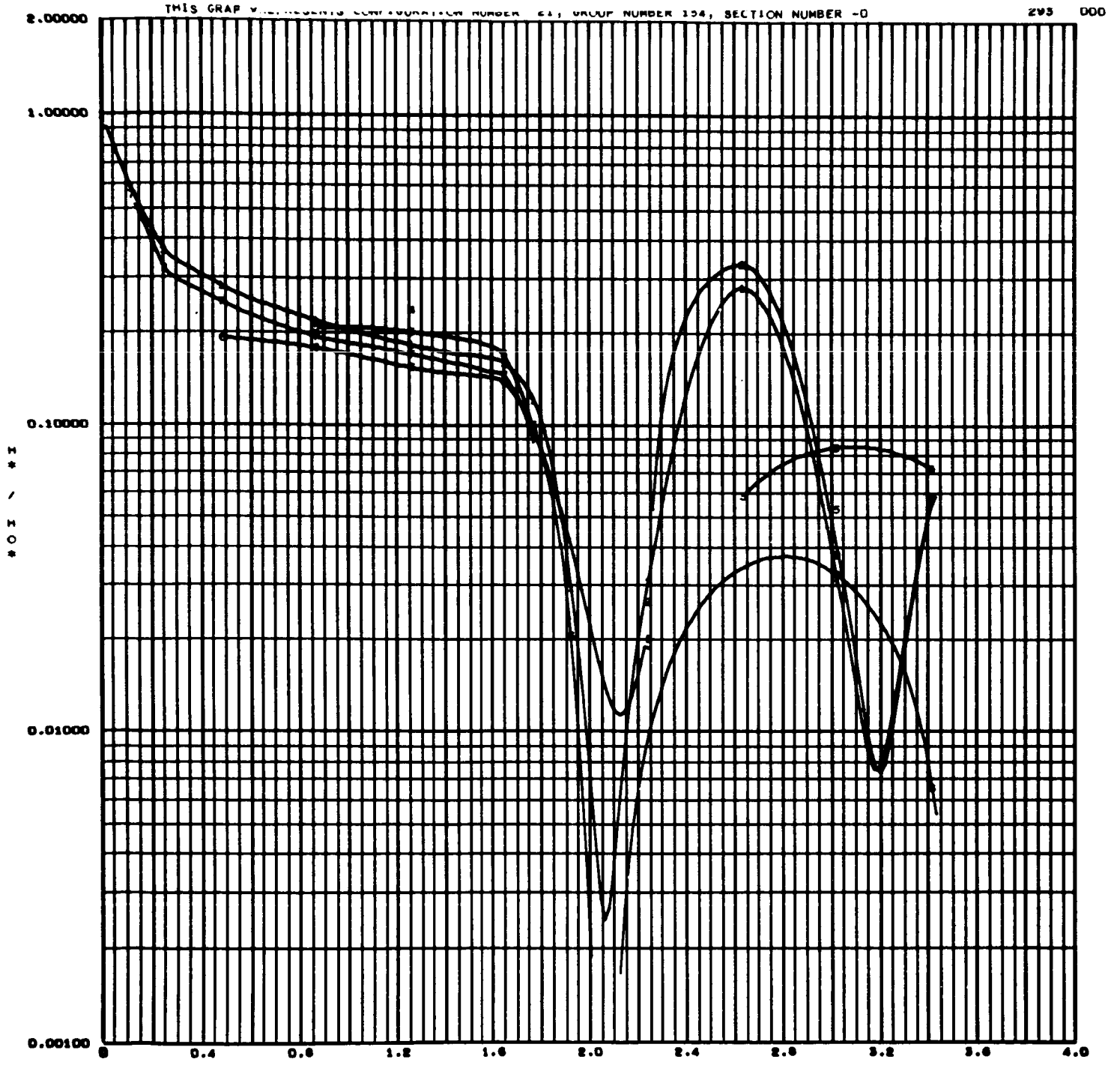
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 154
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0848 X 10^6
H_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1779.90 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

HEAT TRANSFER TEST

APOLLO

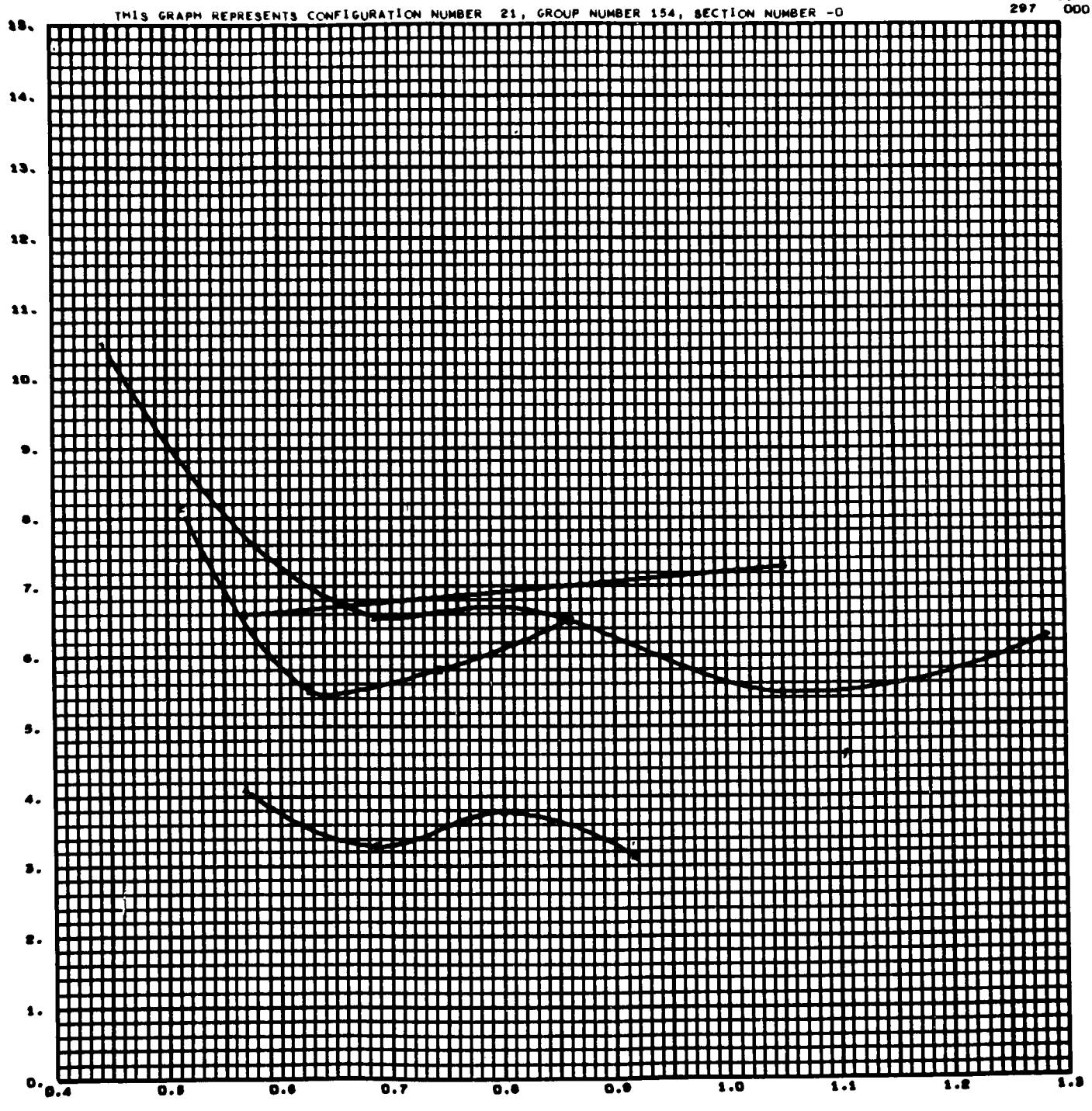
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 154
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0848 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1779.90 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11 L
297 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 154, SECTION NUMBER -0



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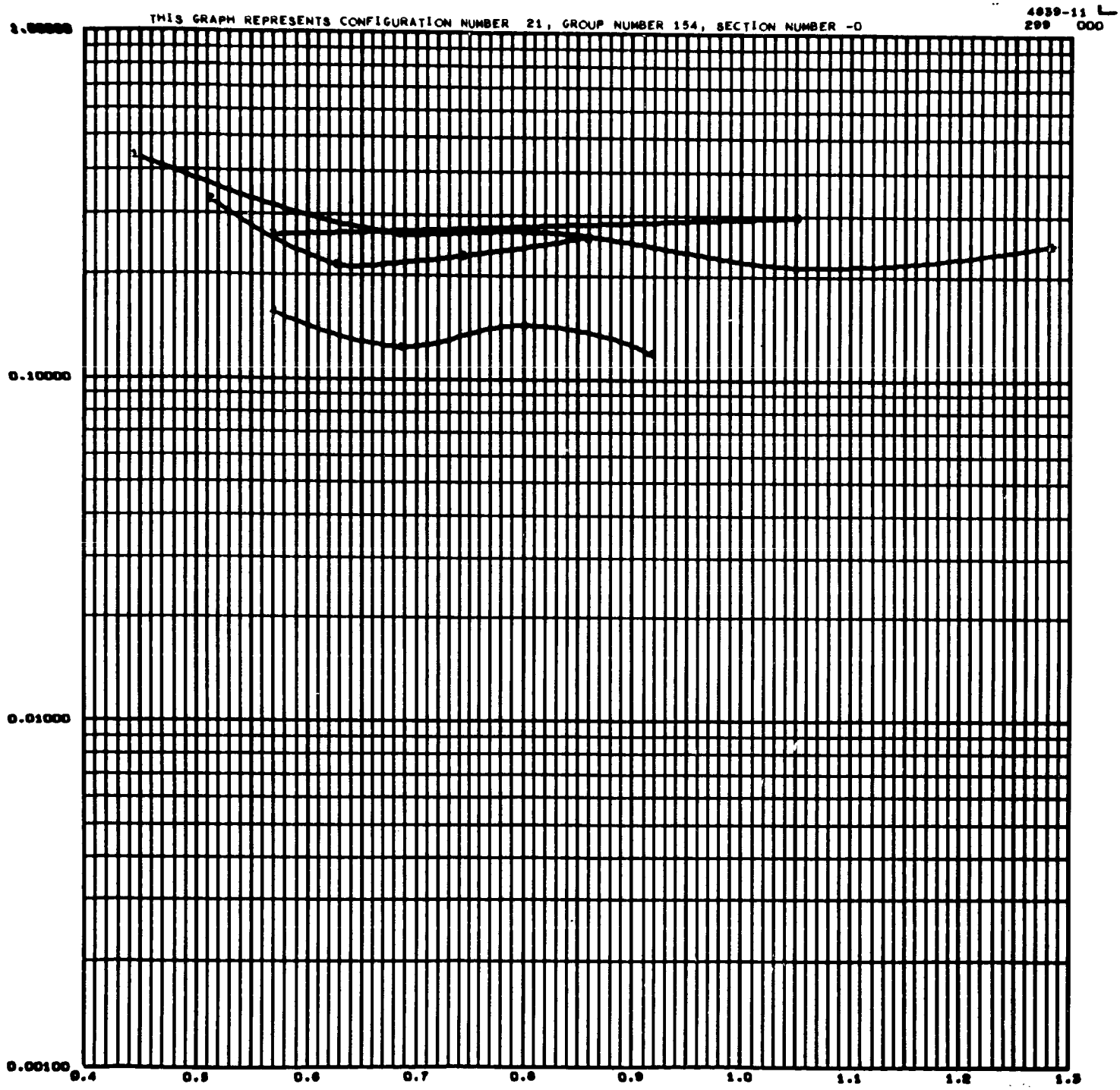
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 154
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0848 X 10^6
H_O^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1779.90 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

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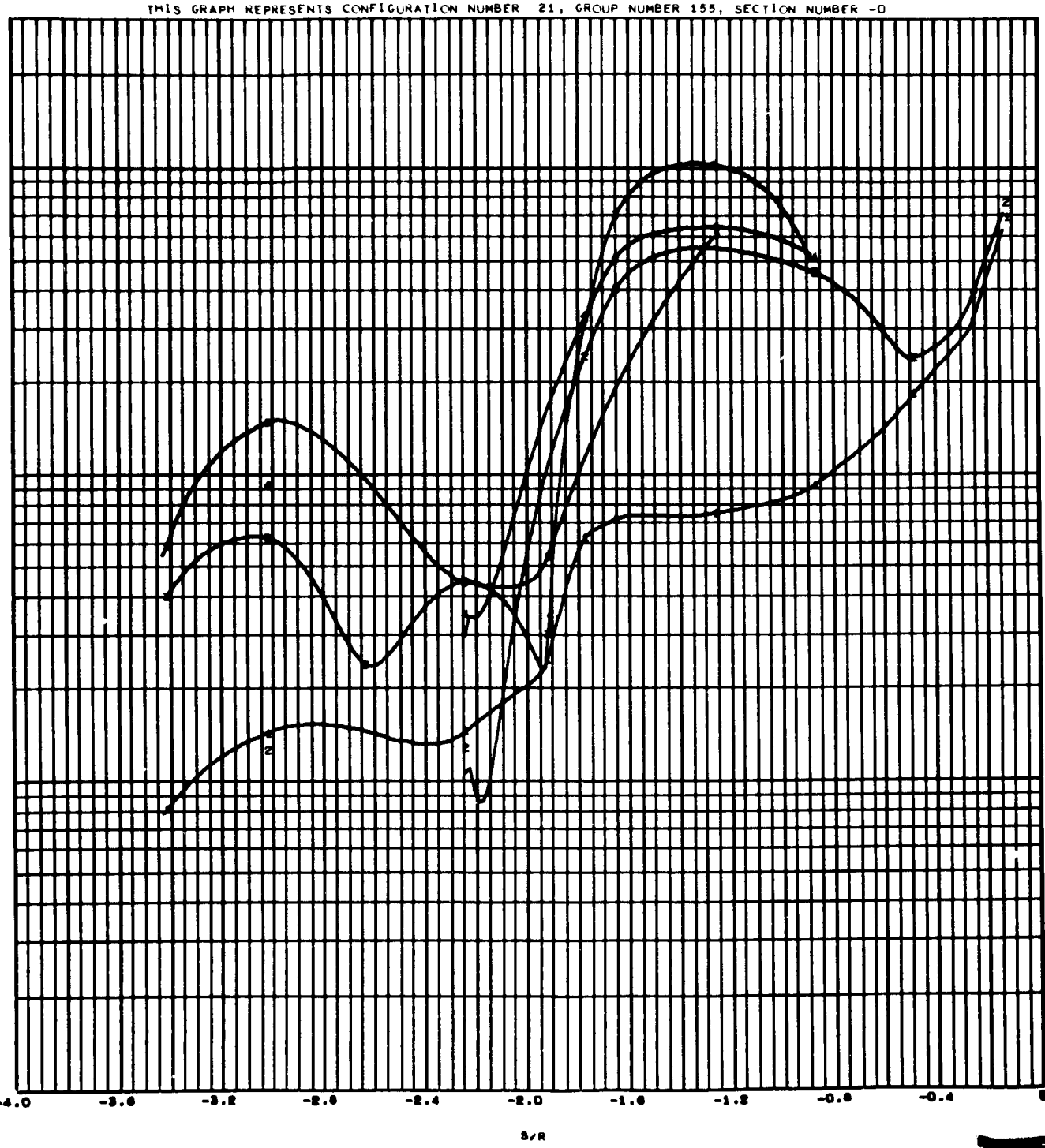
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 155
TOTAL PRESSURE 753.8 PSIA
REYNOLDS NUMBER PER INCH 0.0833 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1798.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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[redacted]

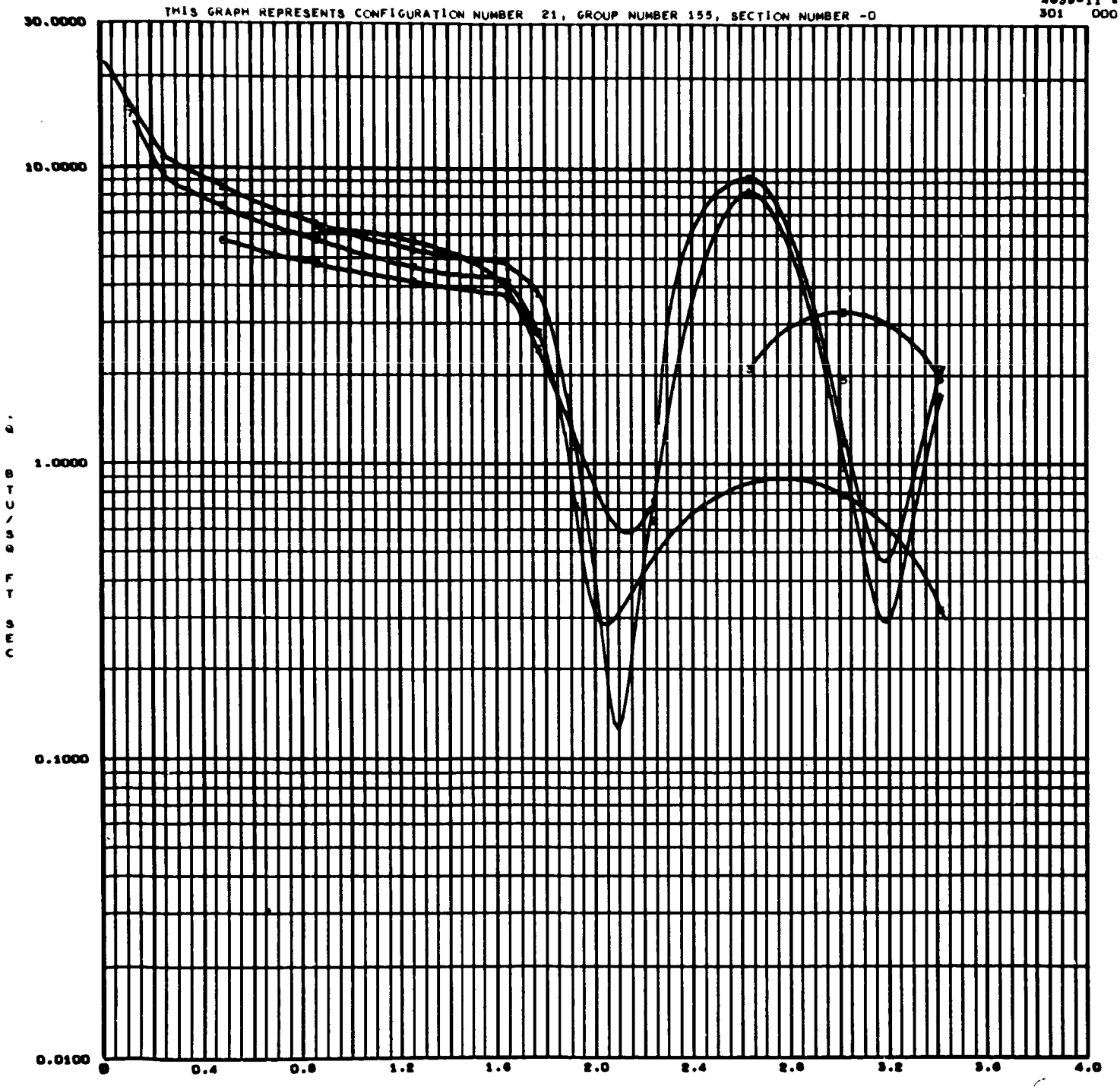
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 155
TOTAL PRESSURE 753.8 PSIA
REYNOLDS NUMBER PER INCH 0.0833 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1798.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

[redacted]

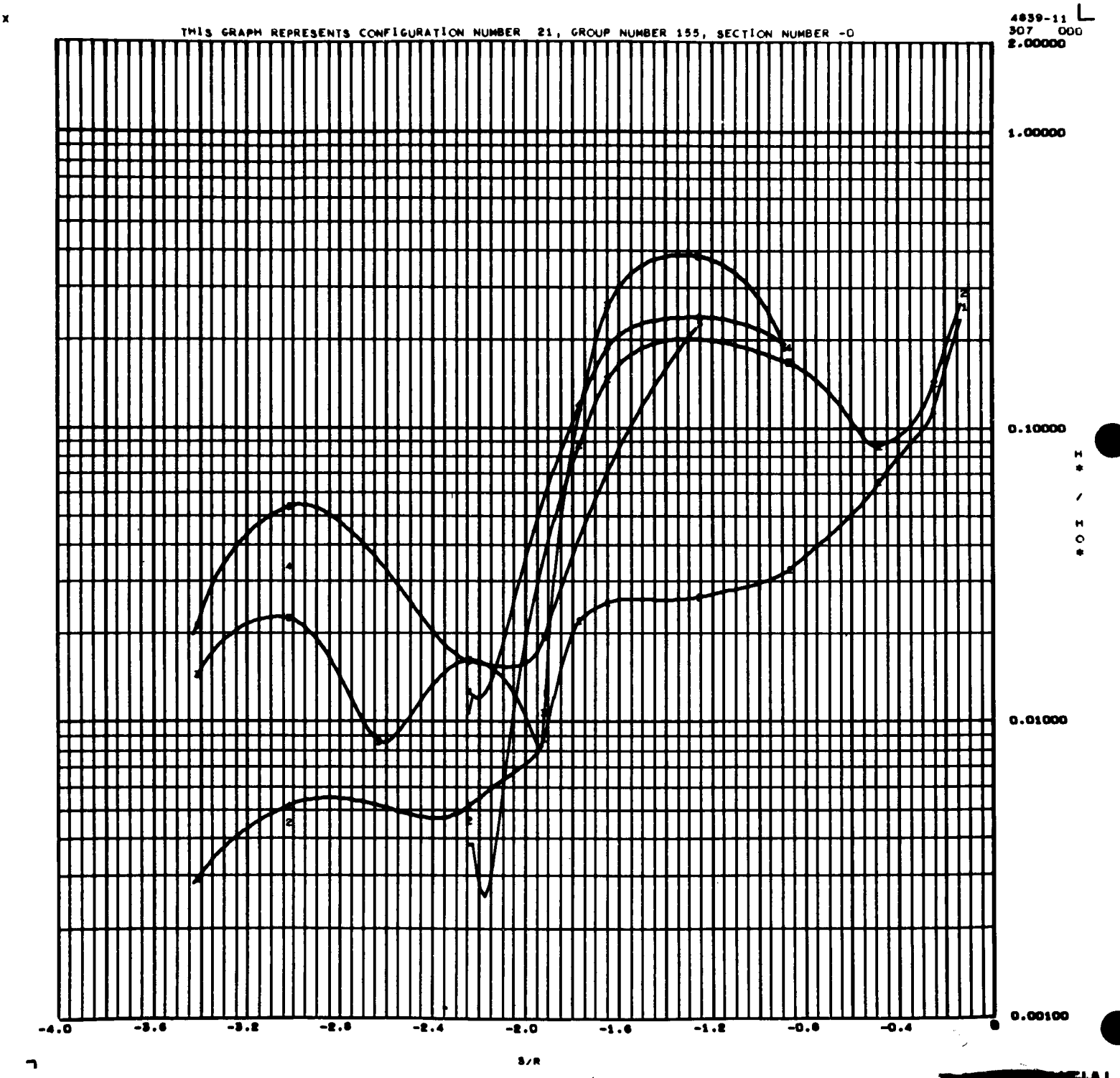
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 155
TOTAL PRESSURE 753.8 PSIA
REYNOLDS NUMBER PER INCH 0.0833 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1798.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

CONFIDENTIAL

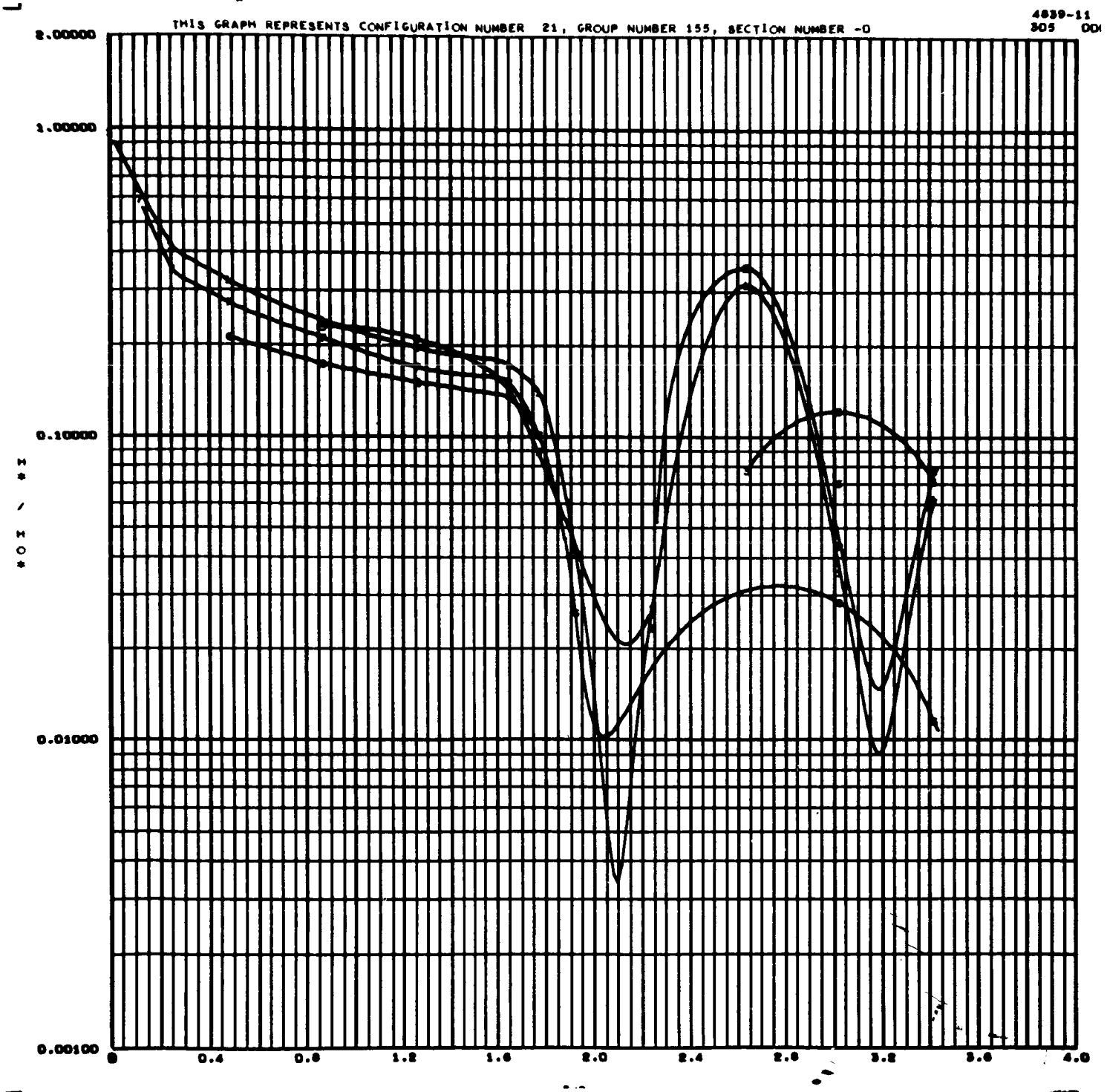
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 155
TOTAL PRESSURE 753.8 PSIA
REYNOLDS NUMBER PER INCH 0.0833 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1798.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

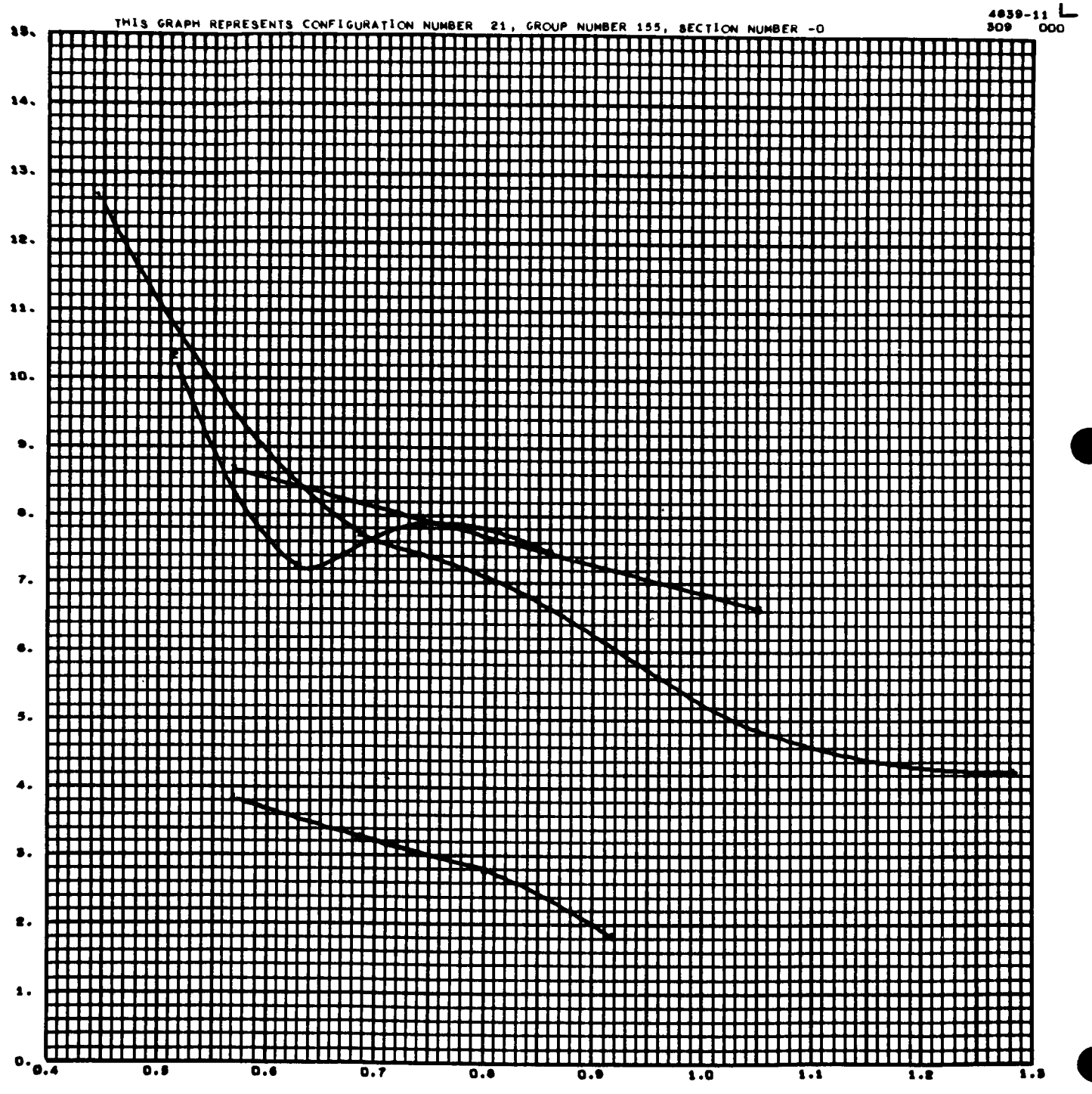
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 155
TOTAL PRESSURE 753.8 PSIA
REYNOLDS NUMBER PER INCH 0.0833 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1798.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	↓
3.0	3	↓
4.0	4	LEEWARD STRAKE DATA



[redacted]

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HEAT TRANSFER TEST

APOLLO

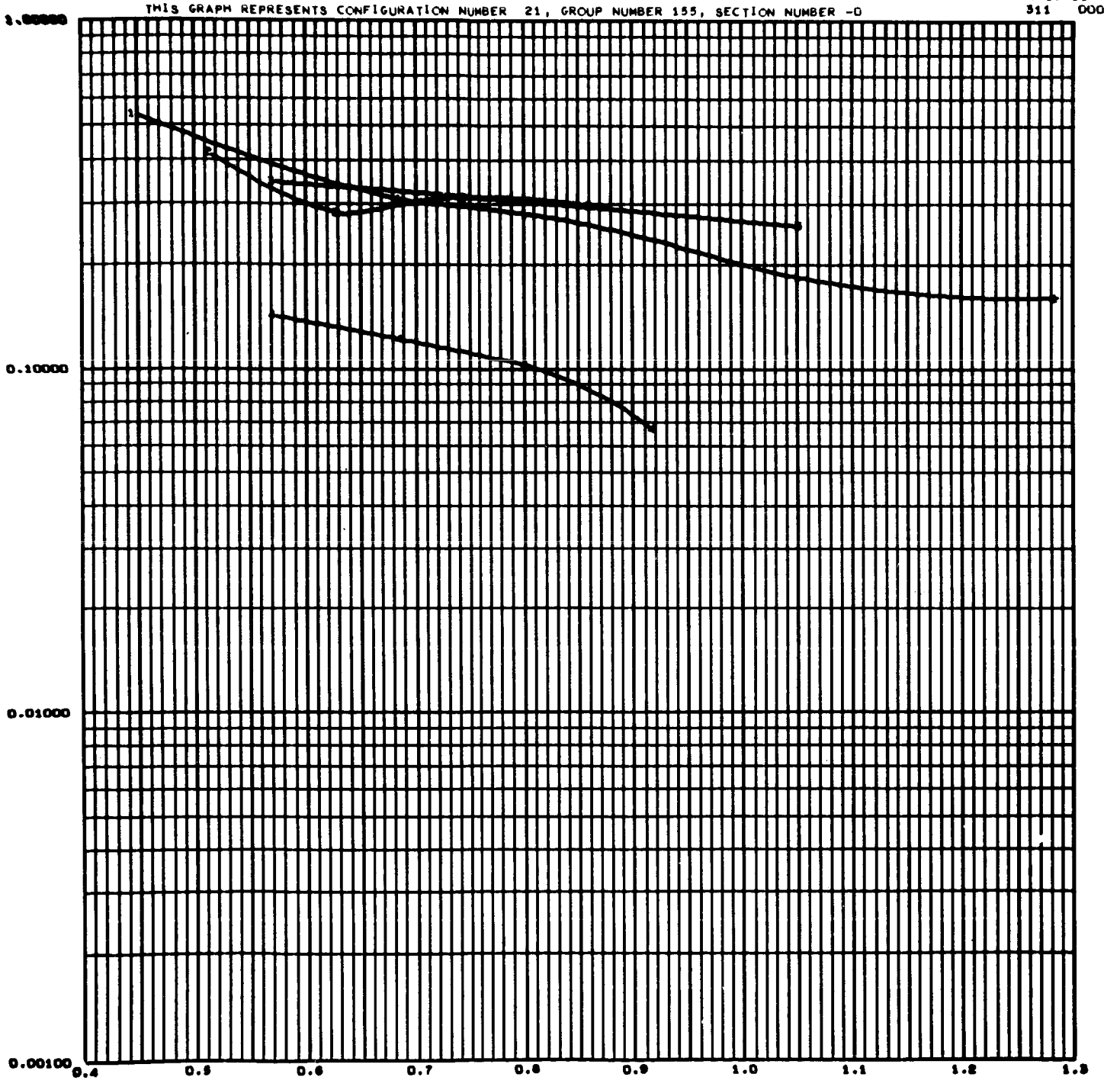
A E D C TUNNEL C

CONFIGURATION 21 MACH NO. 10.13
GROUP NO. 155
TOTAL PRESSURE 753.8 PSIA
REYNOLDS NUMBER PER INCH 0.0833 x 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1798.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-11
311 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 21, GROUP NUMBER 155, SECTION NUMBER -0



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~~CONFIDENTIAL~~

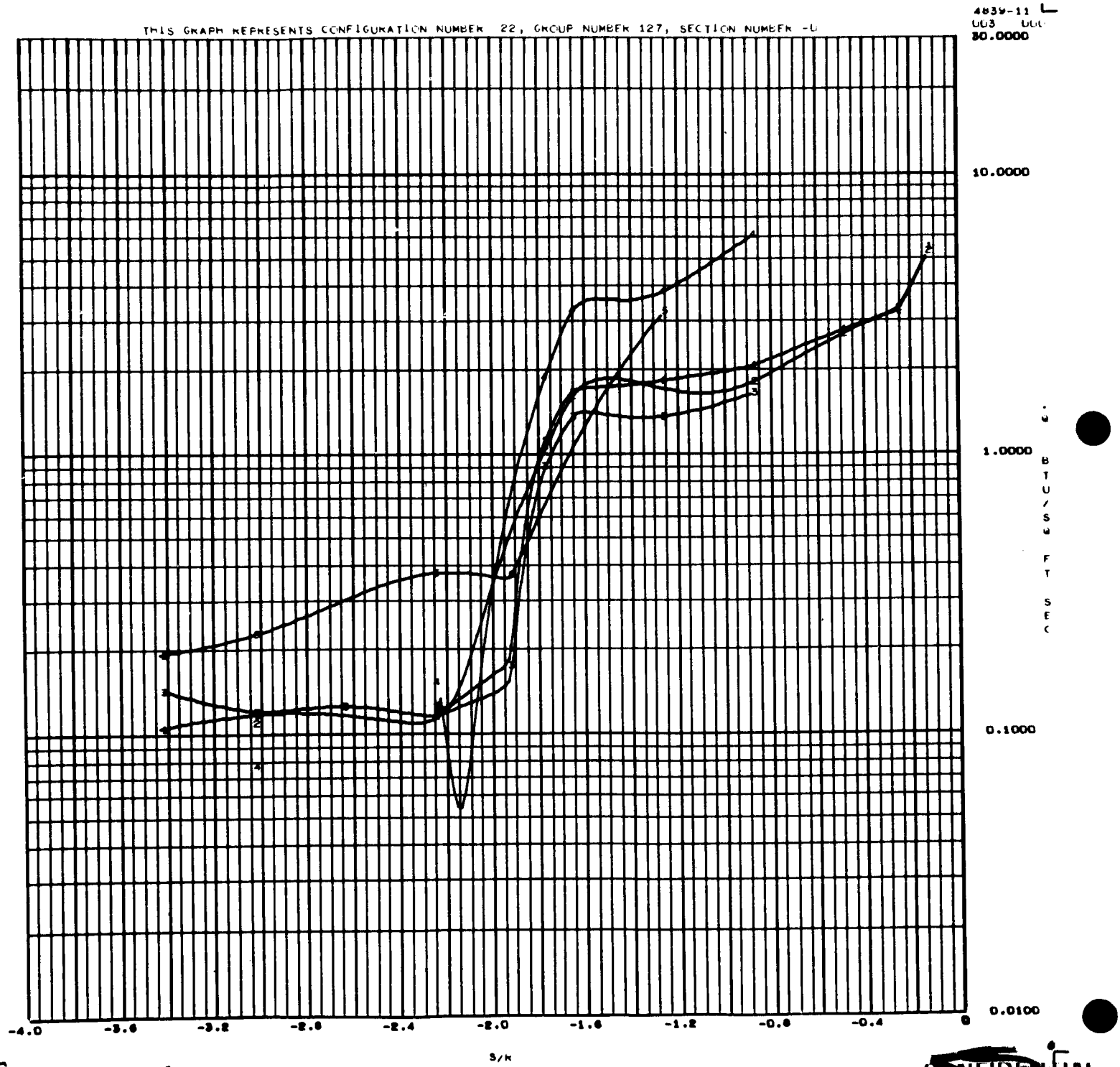
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 127
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0276 X 10^6
H_0^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1663.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

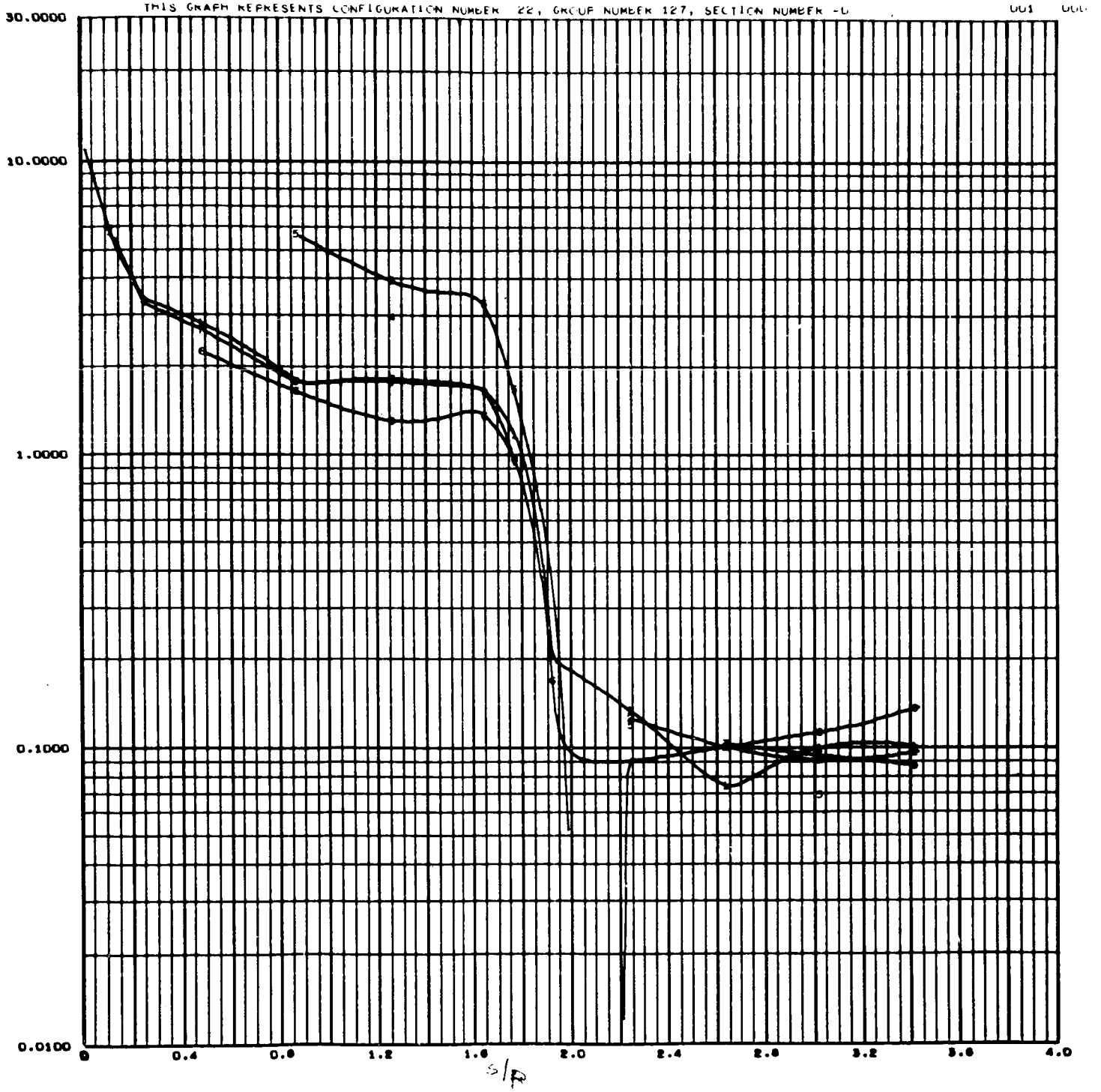
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 127
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0276 X 10^6
μ_o 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1663.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4639-11
001 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 127, SECTION NUMBER -0



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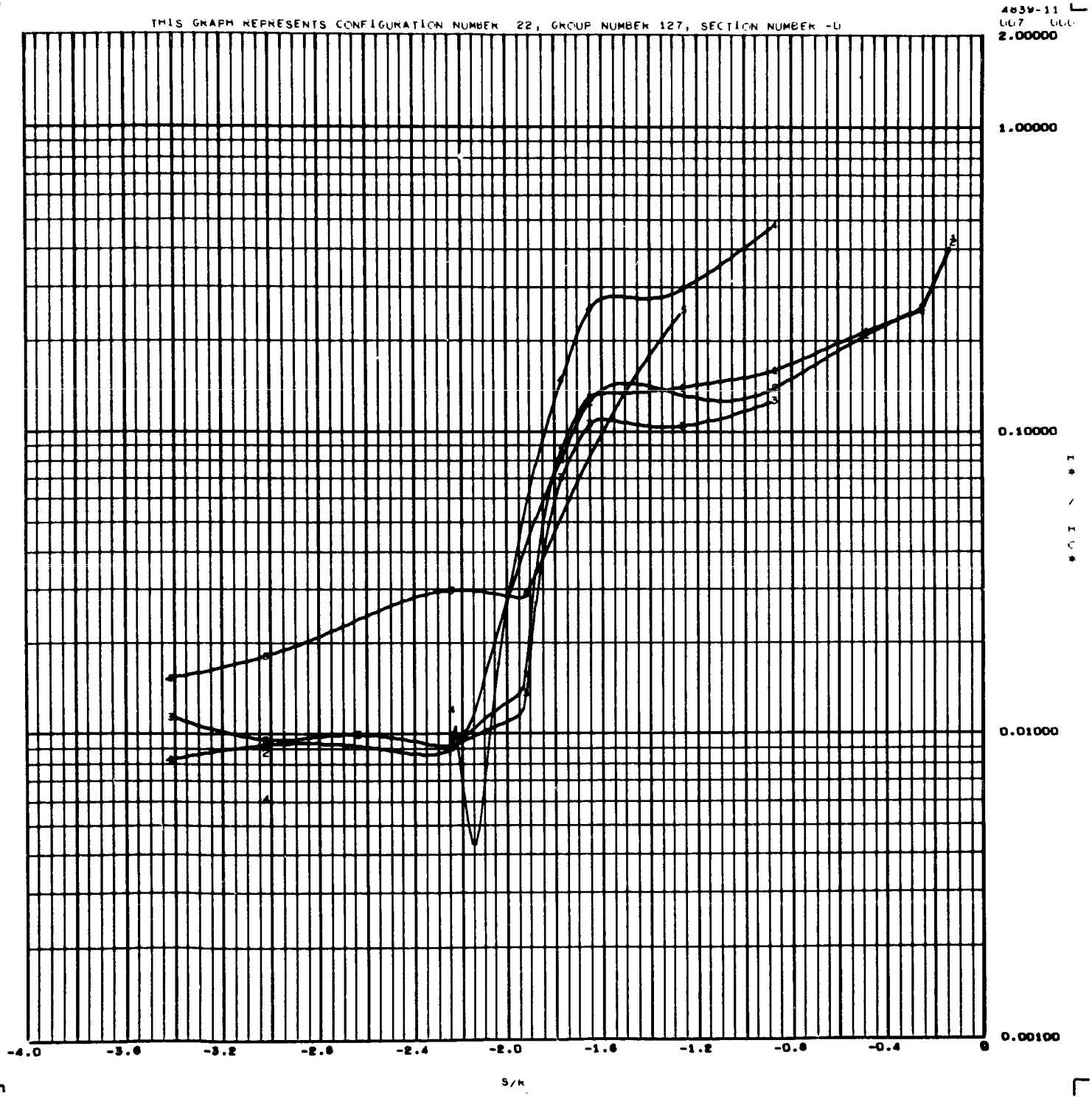
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 127
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0276 X 10^6
M_∞^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1663.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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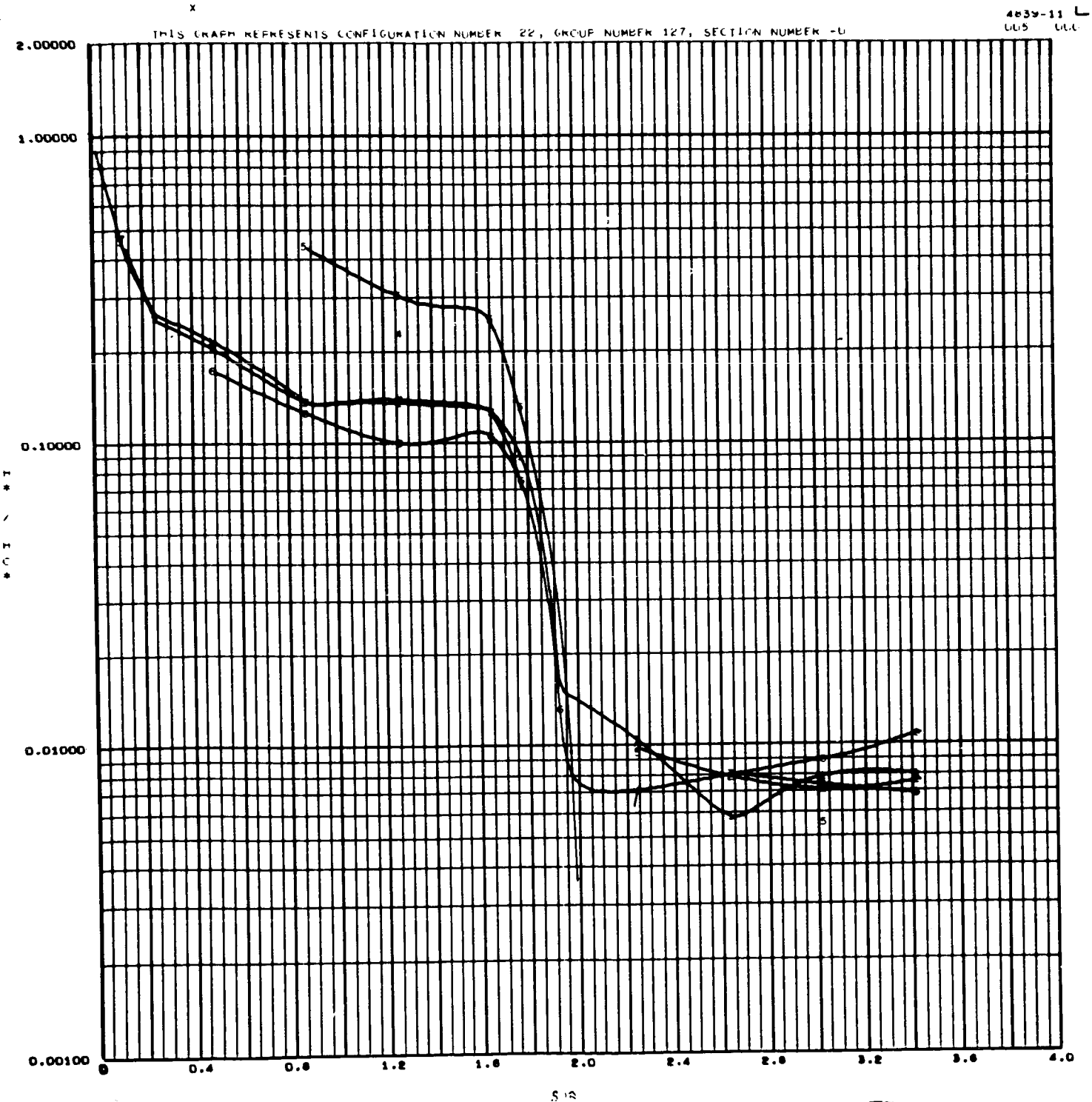
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 127
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0276 X 10^6
μ_0^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1663.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

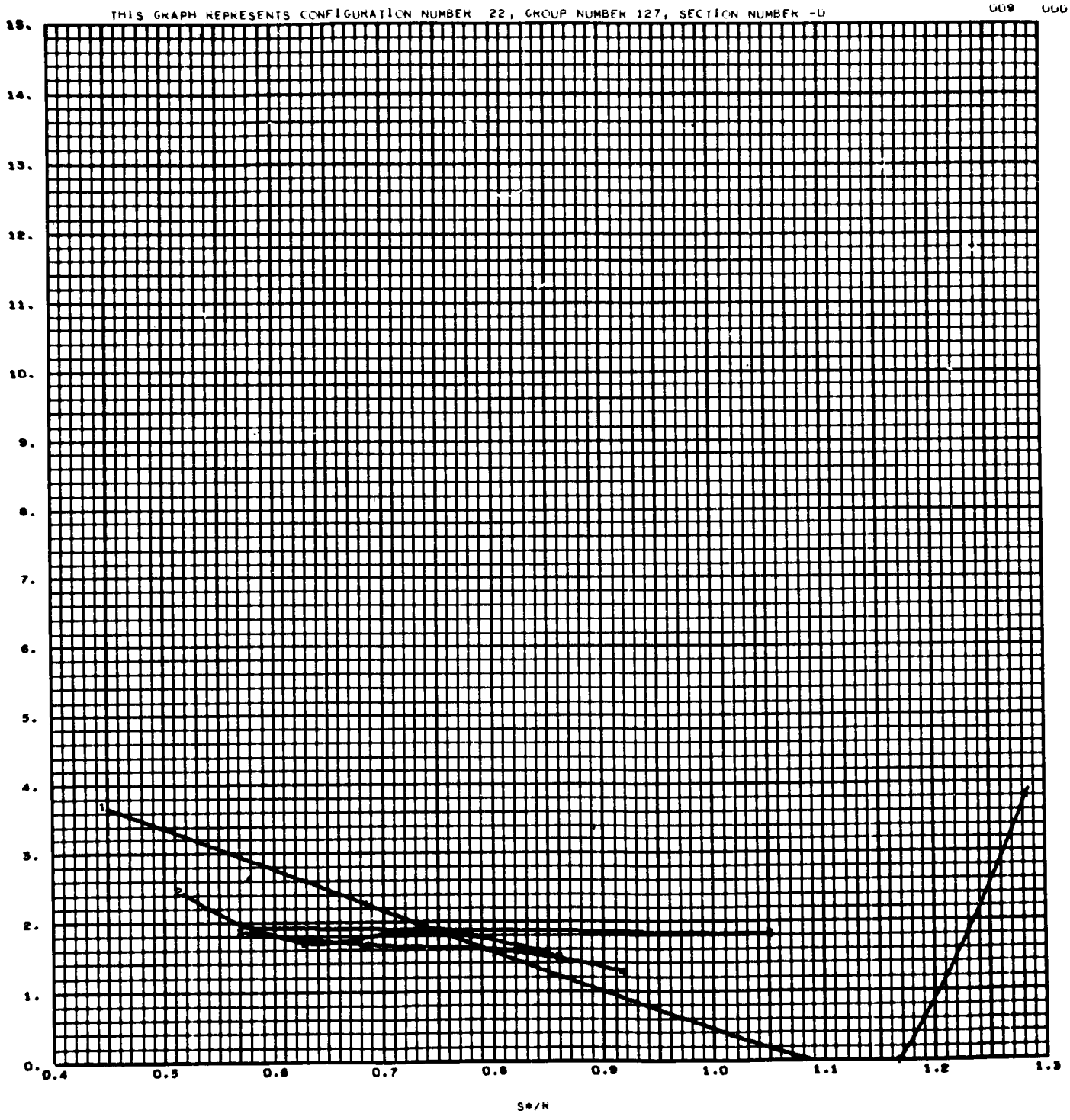
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 127
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0276 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1663.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
009 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 127, SECTION NUMBER -0



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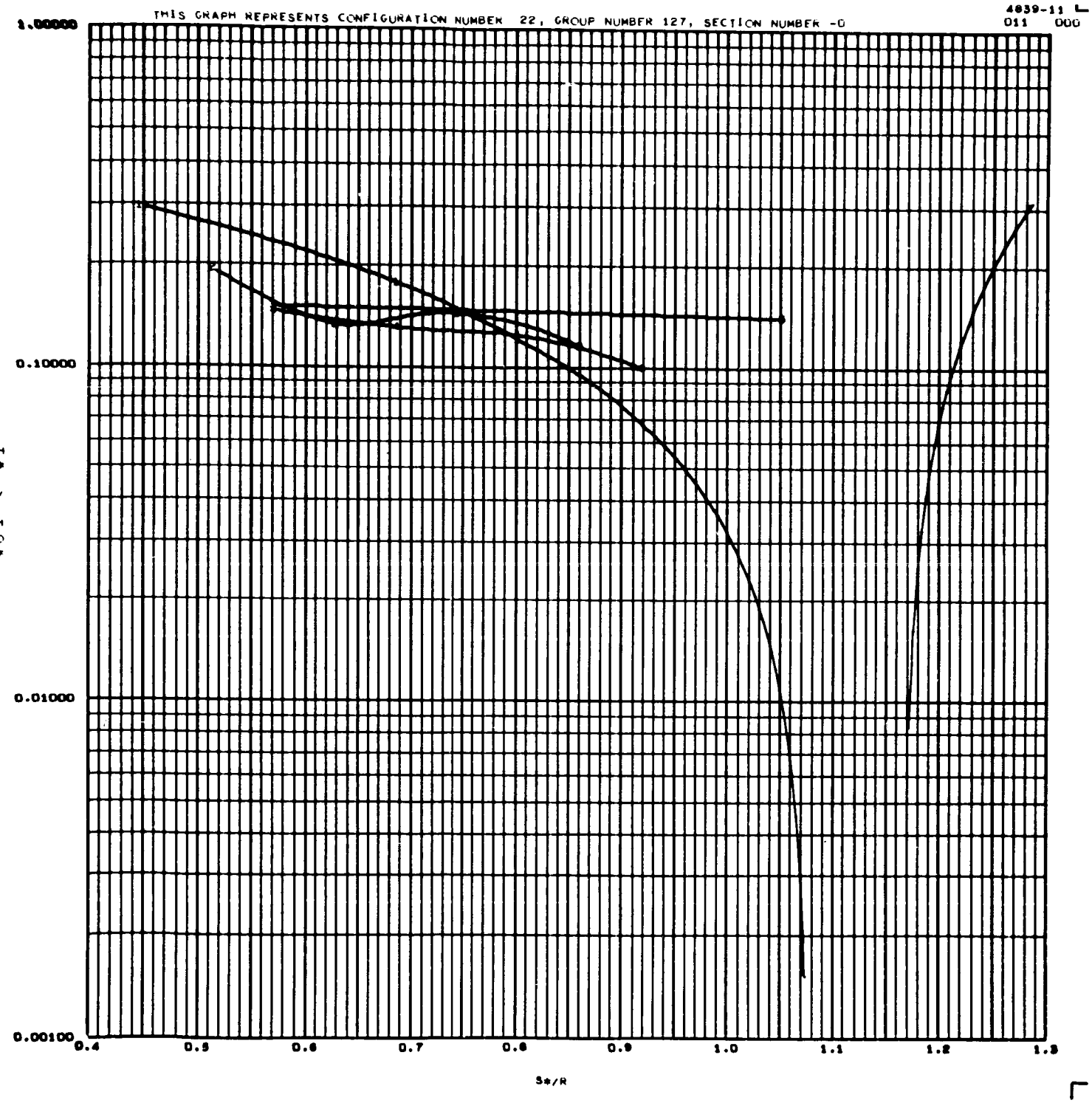
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 127
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0276 X 10^6
H_O^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1663.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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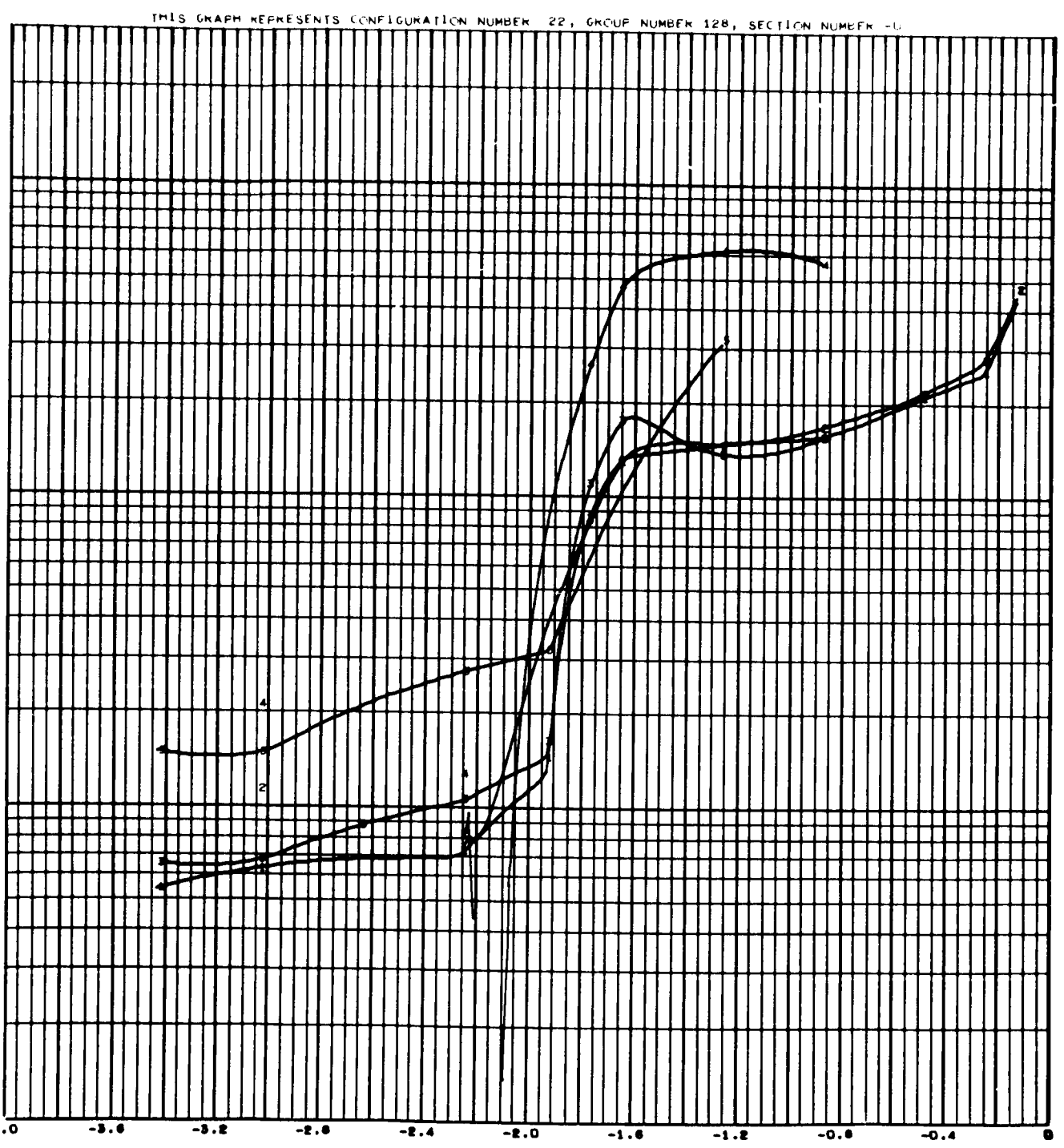
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 128
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_c^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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[redacted]

HEAT TRANSFER TEST

APOLLO

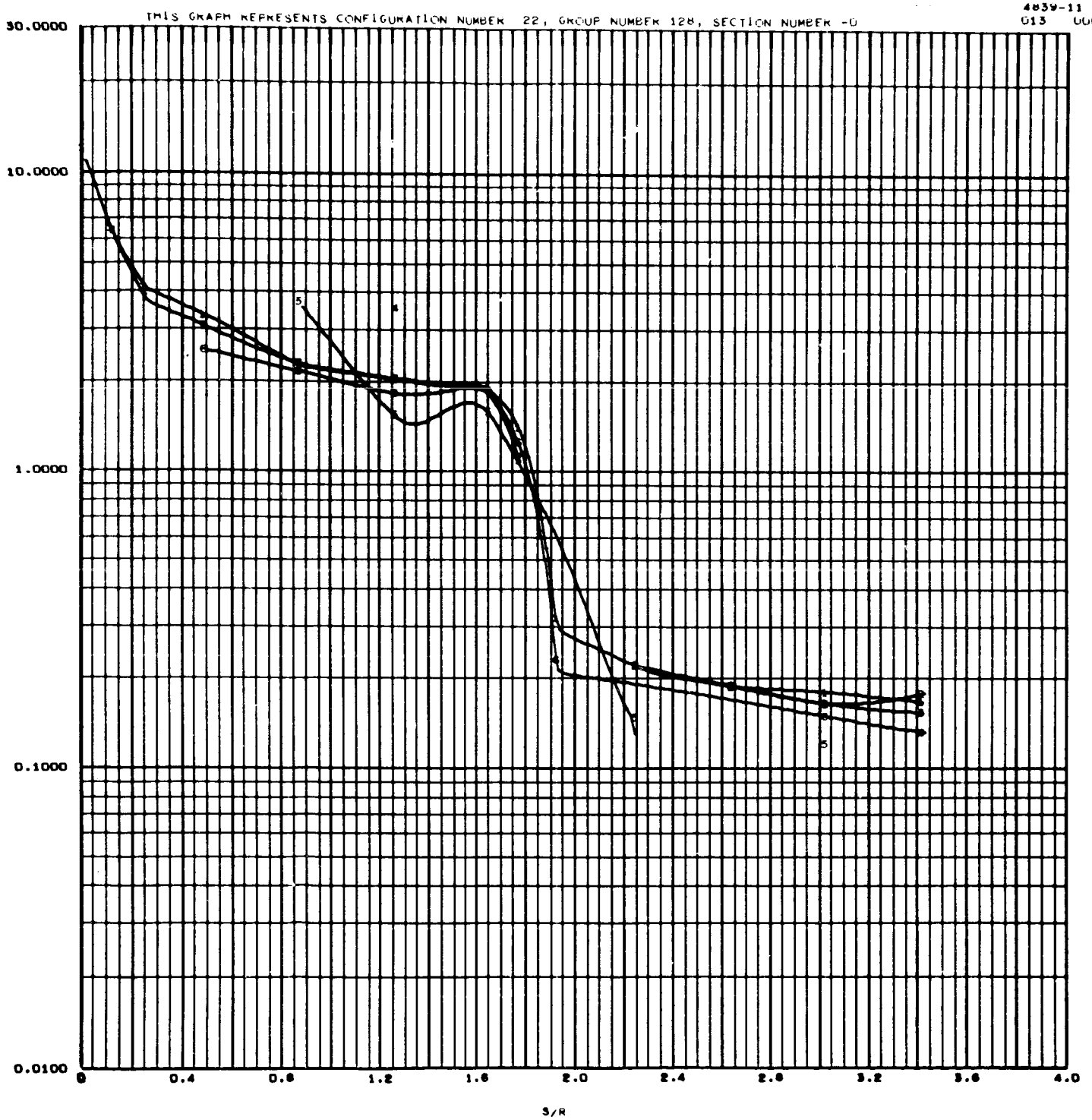
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 128
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_0* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
013 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 128, SECTION NUMBER -0



[redacted]

CONFIDENTIAL

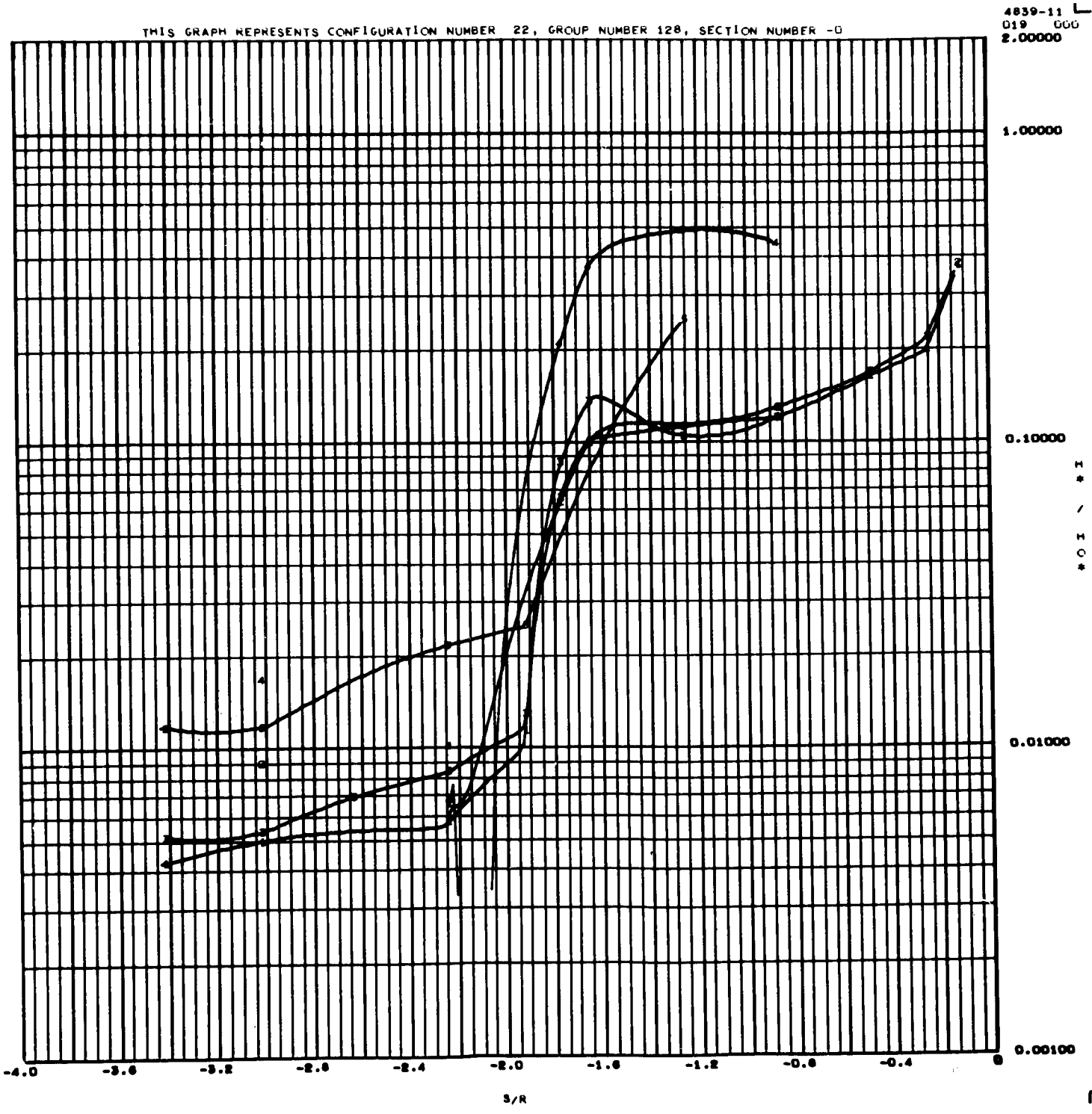
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 128
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 x 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

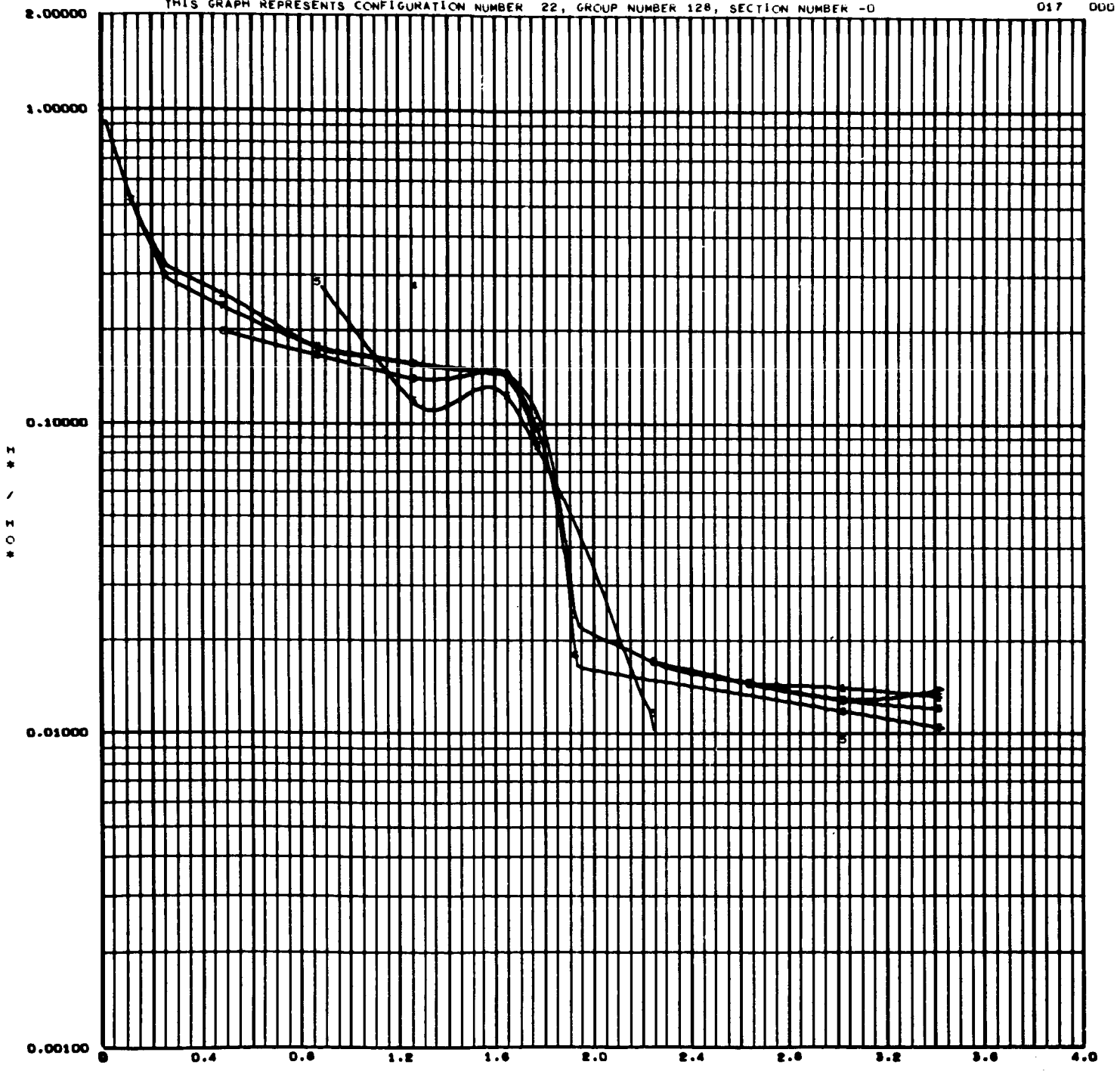
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 128
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4039-11
017 000



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

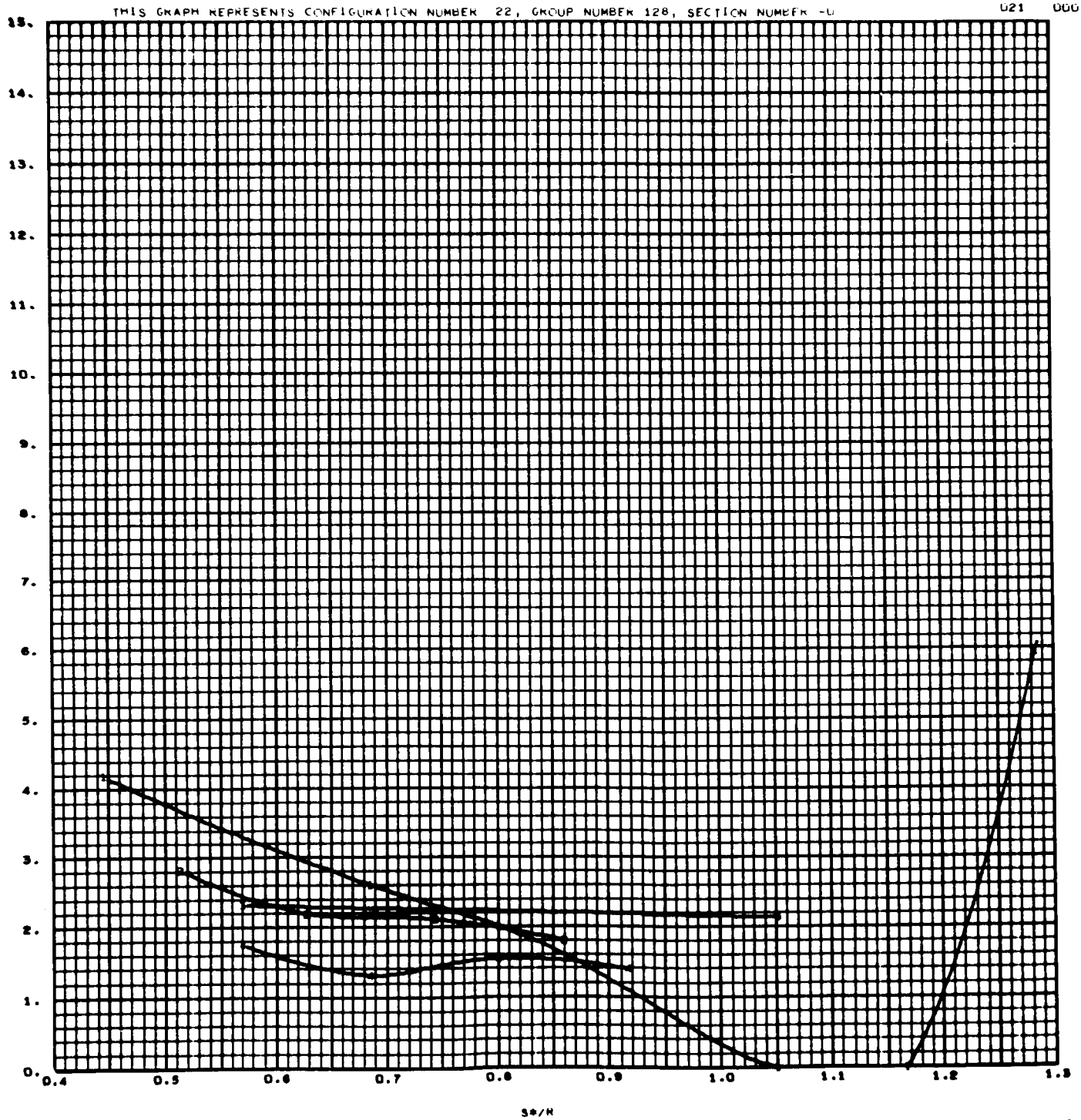
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 128
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
μ_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11 L
021 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 128, SECTION NUMBER -0



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

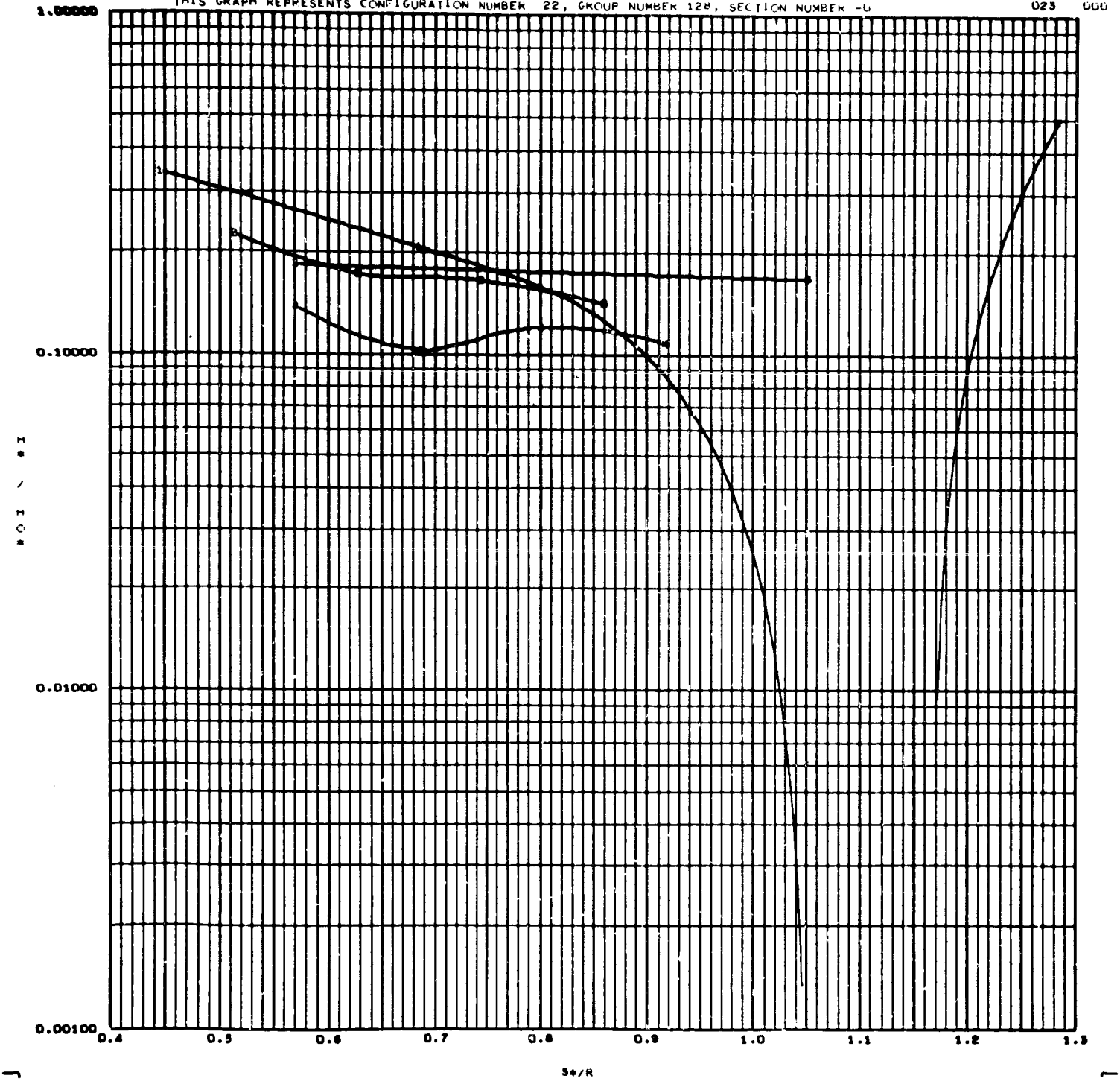
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 128
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 x 10^6
H_o^* 0.04333 LB/FT x SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-11 L
023 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 128, SECTION NUMBER -0



[redacted]

[redacted]

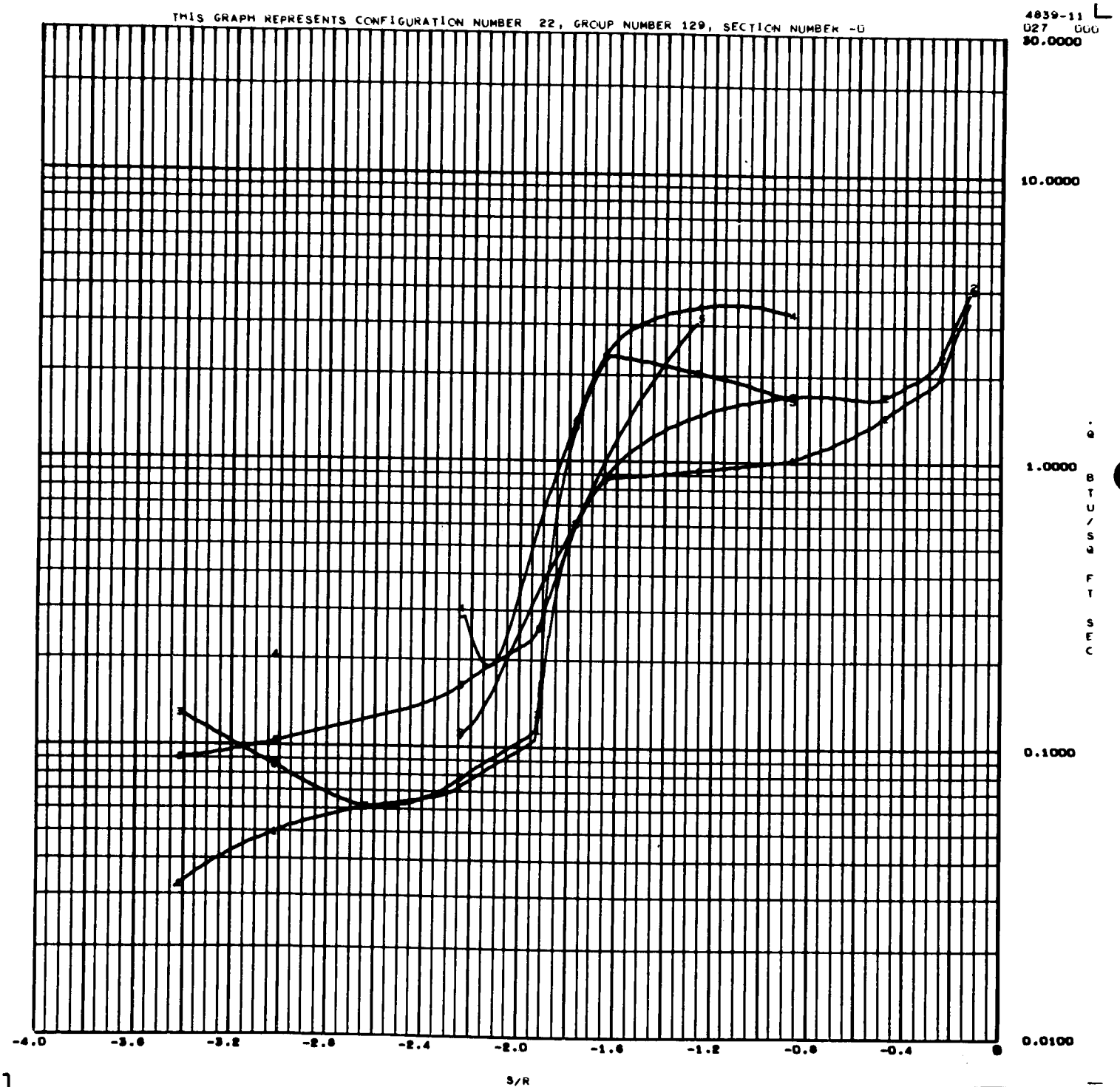
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 129
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o * 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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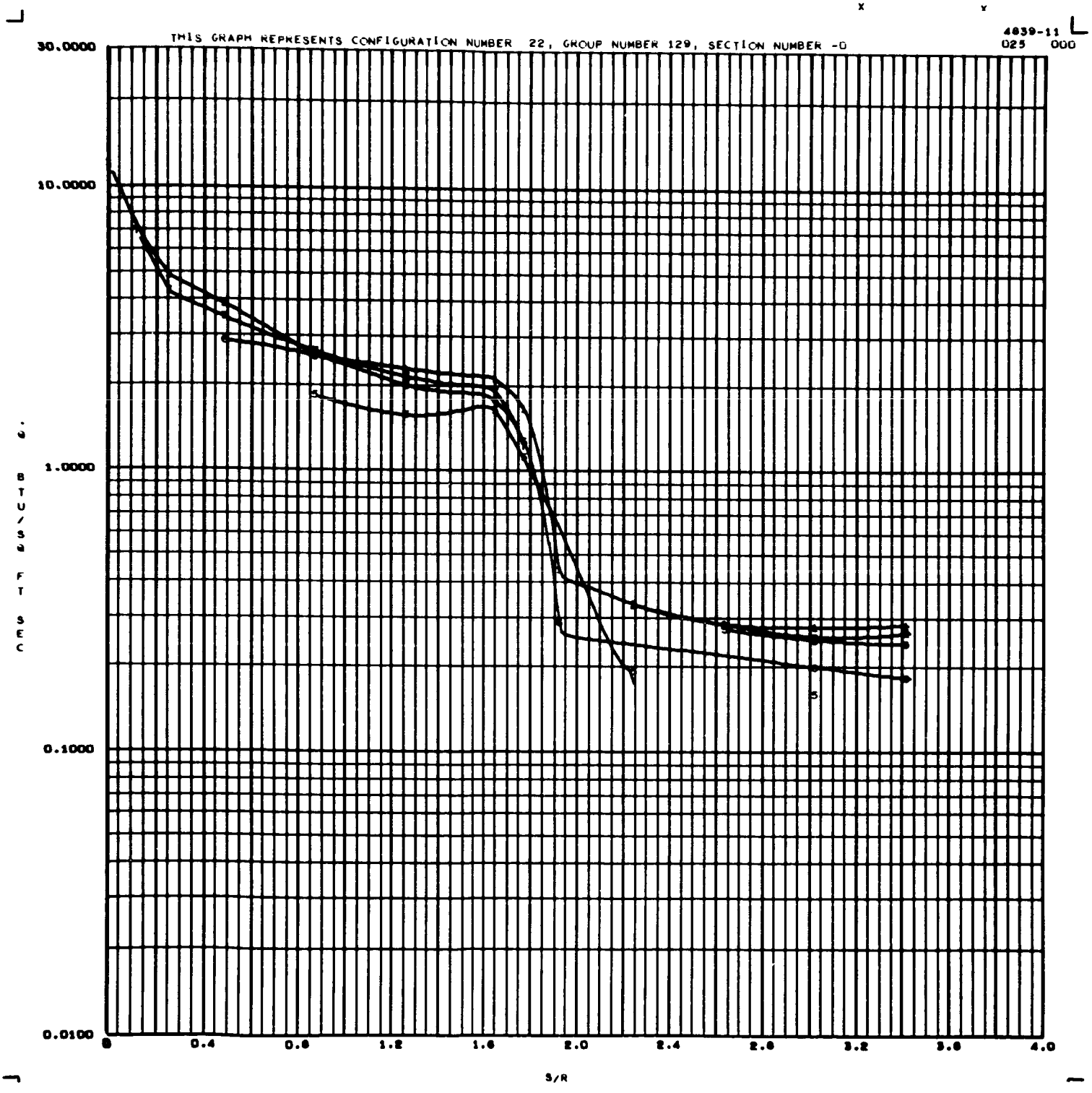
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 129
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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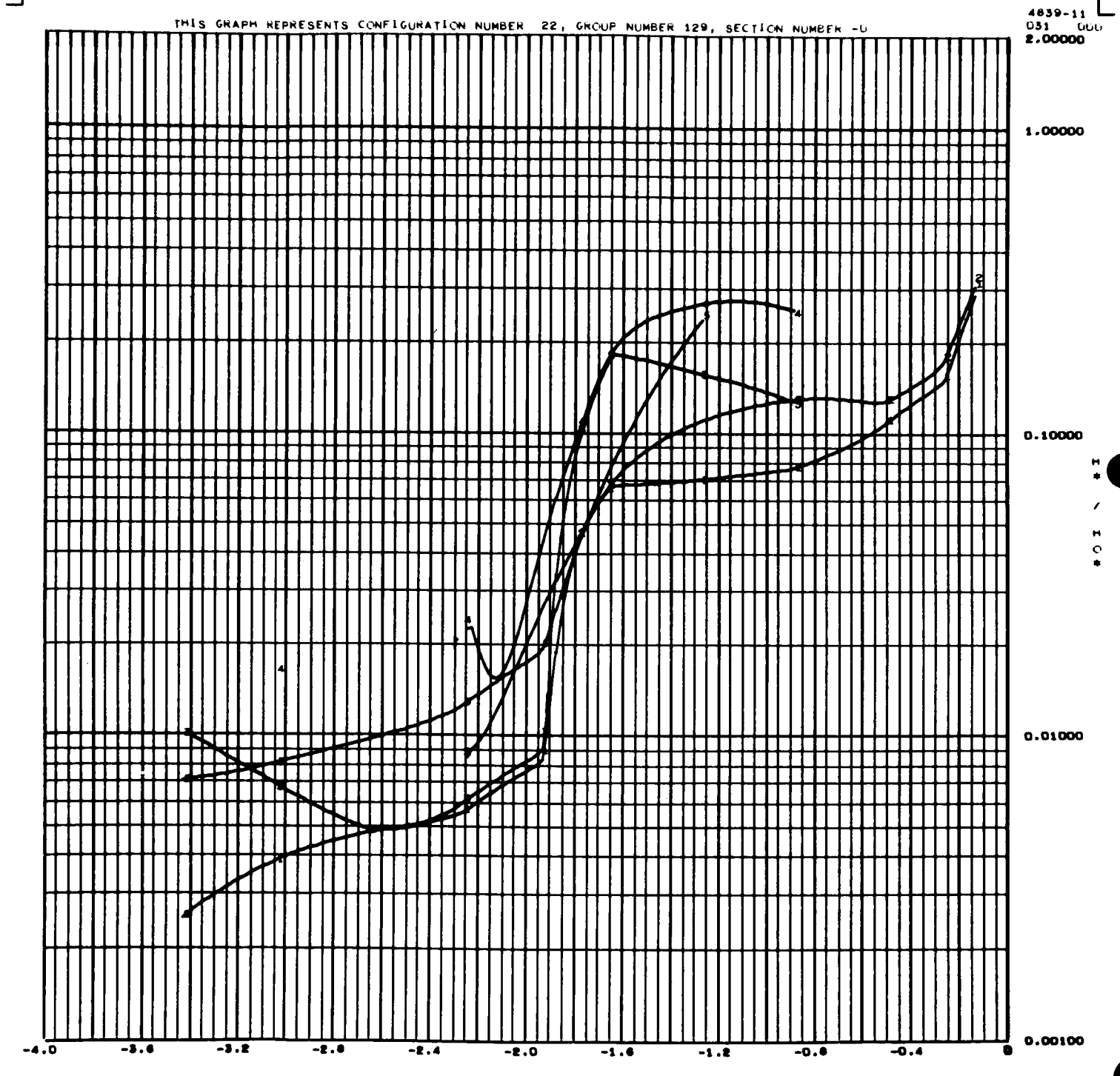
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 129
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1661.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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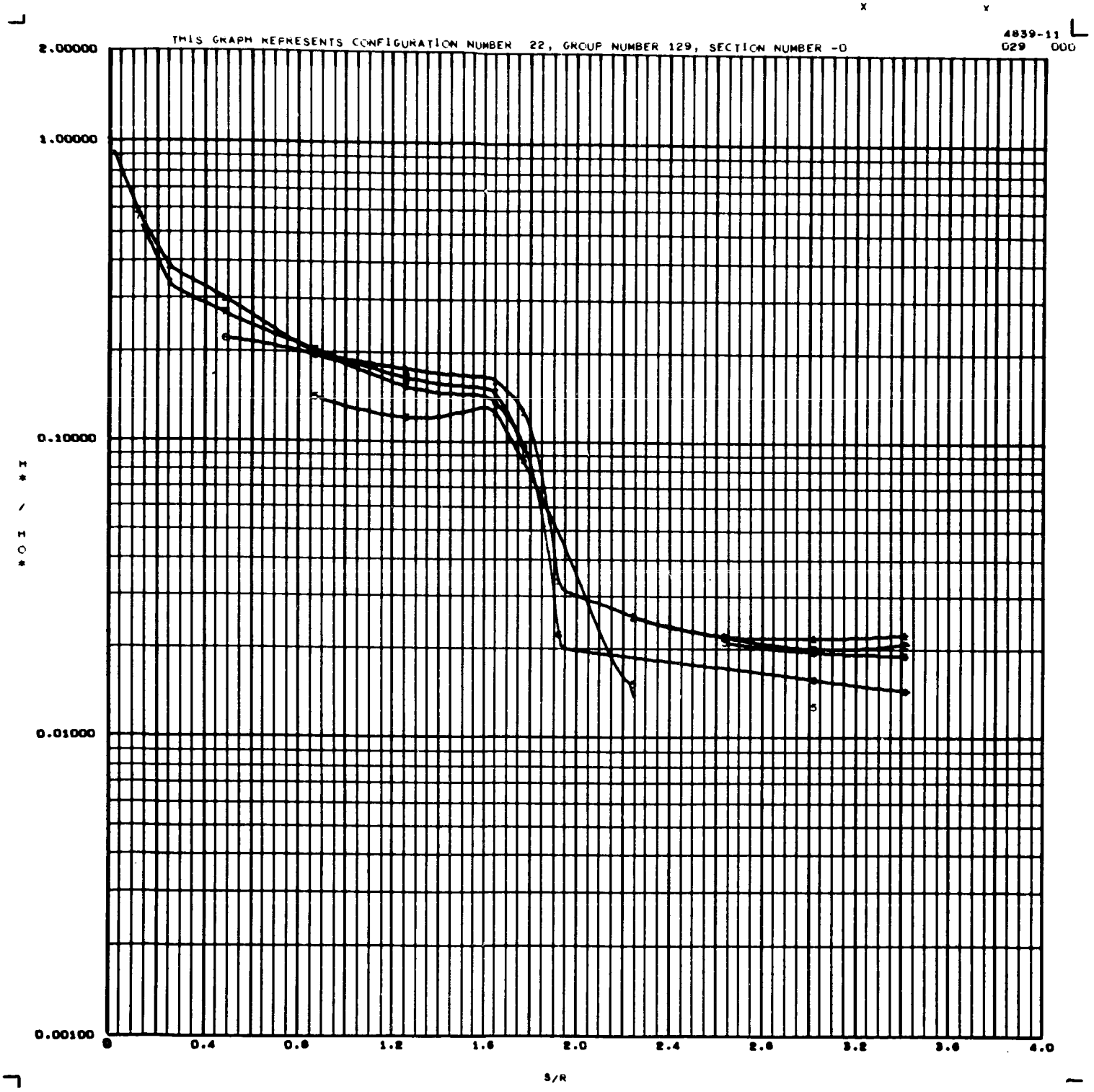
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 129
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

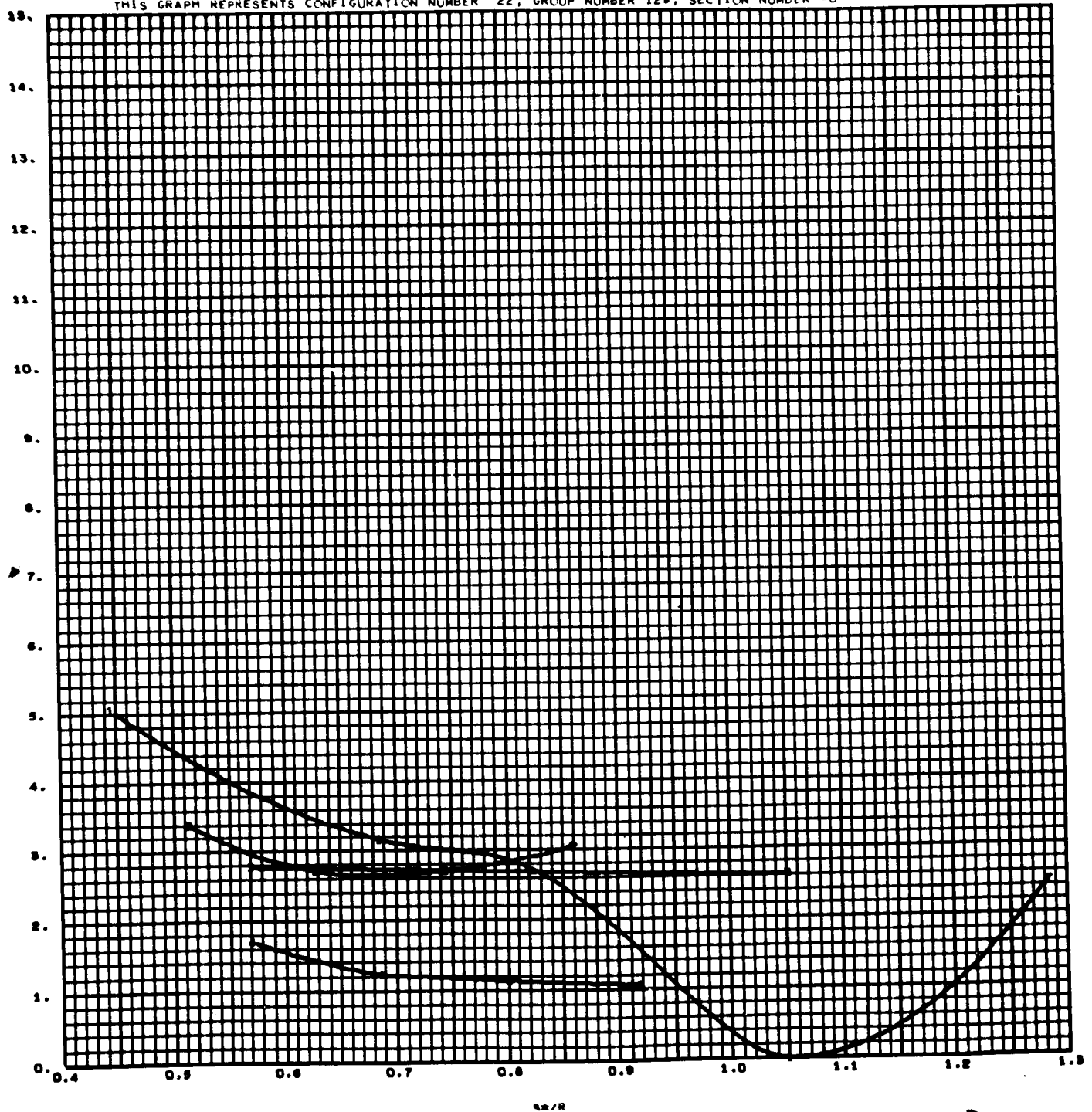
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 129
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

033 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 129, SECTION NUMBER -0



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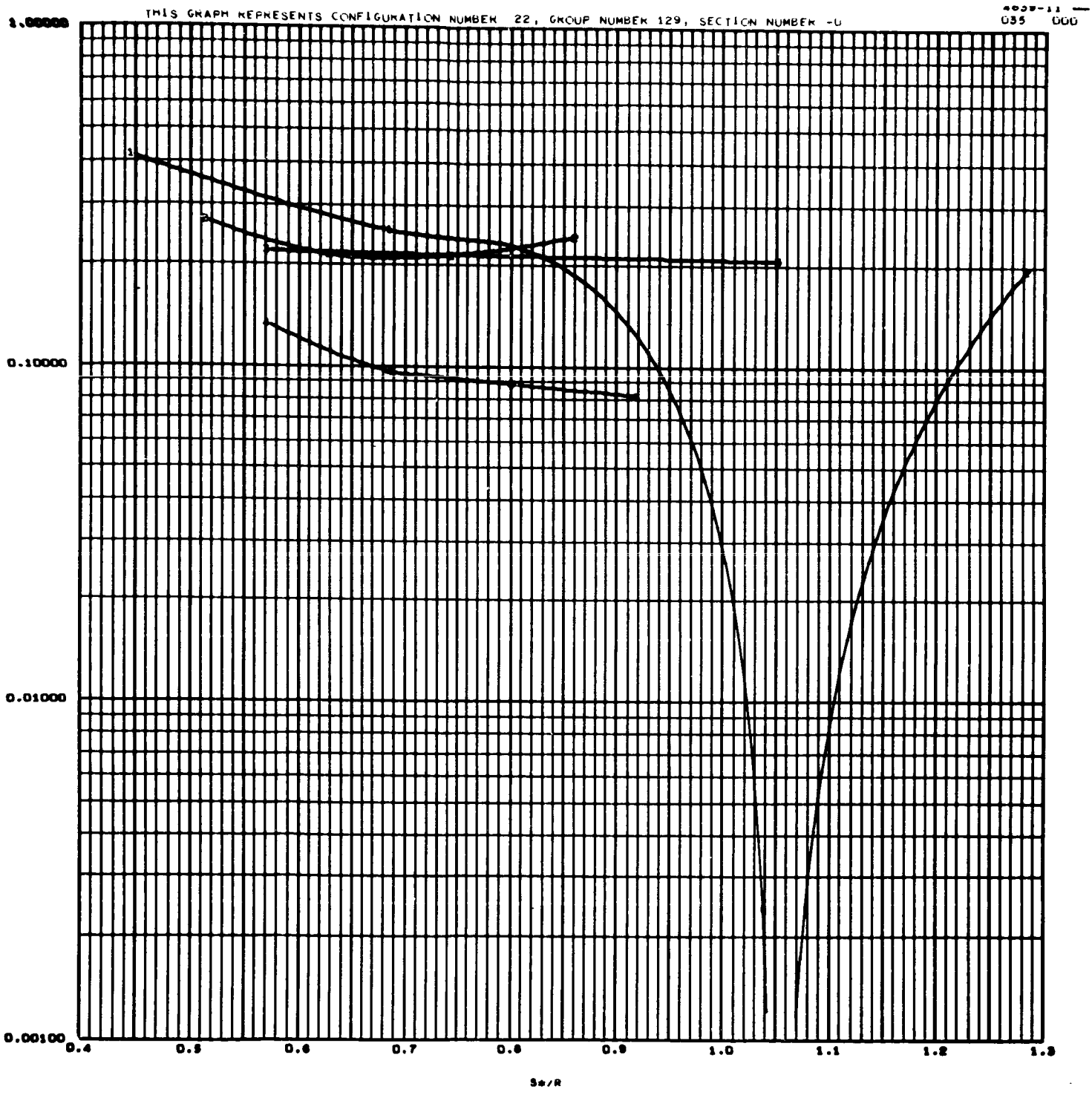
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 129
TOTAL PRESSURE 215.0 PSIA
REYNOLDS NUMBER PER INCH 0.0277 x 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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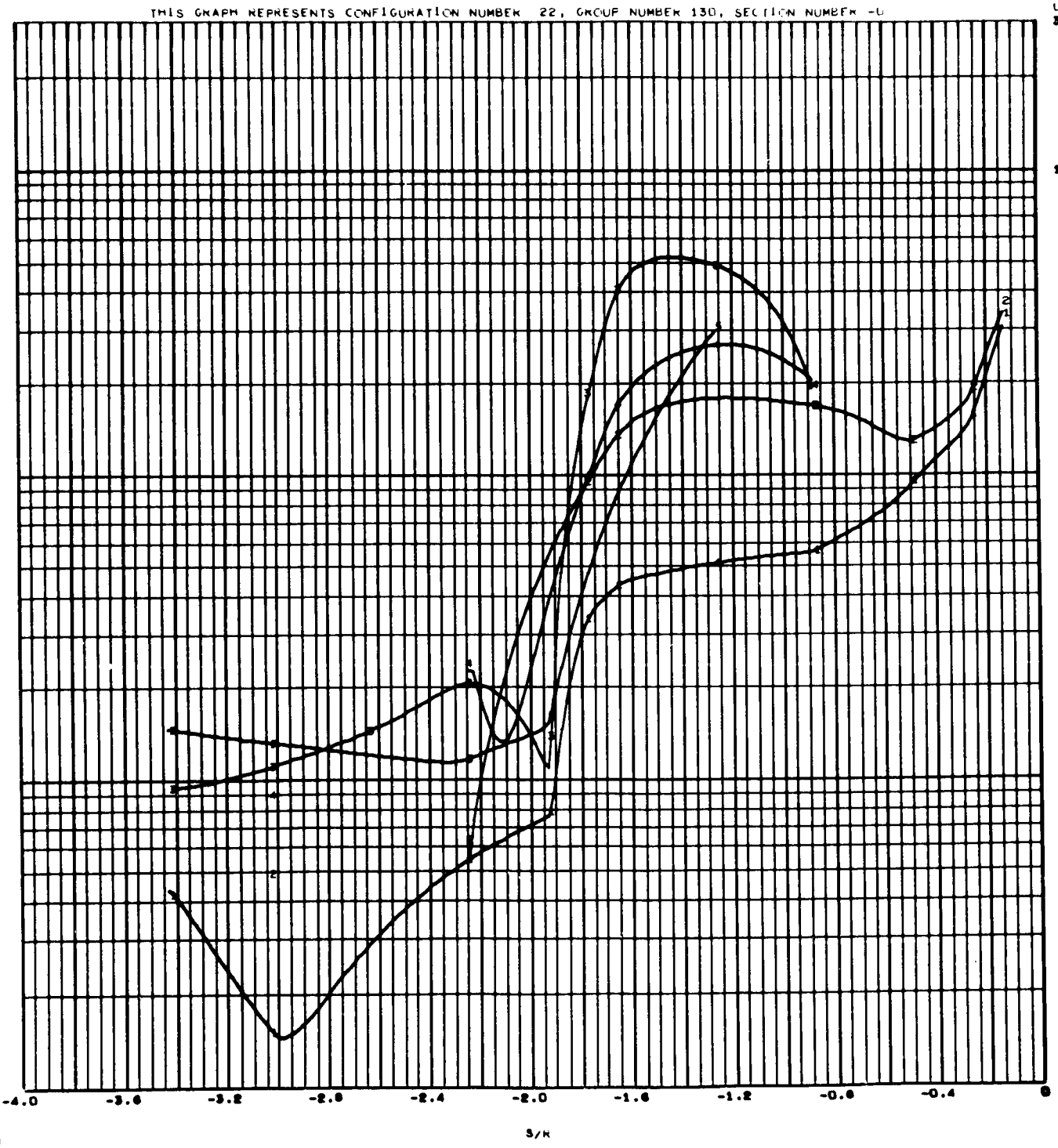
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 130
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1660.50 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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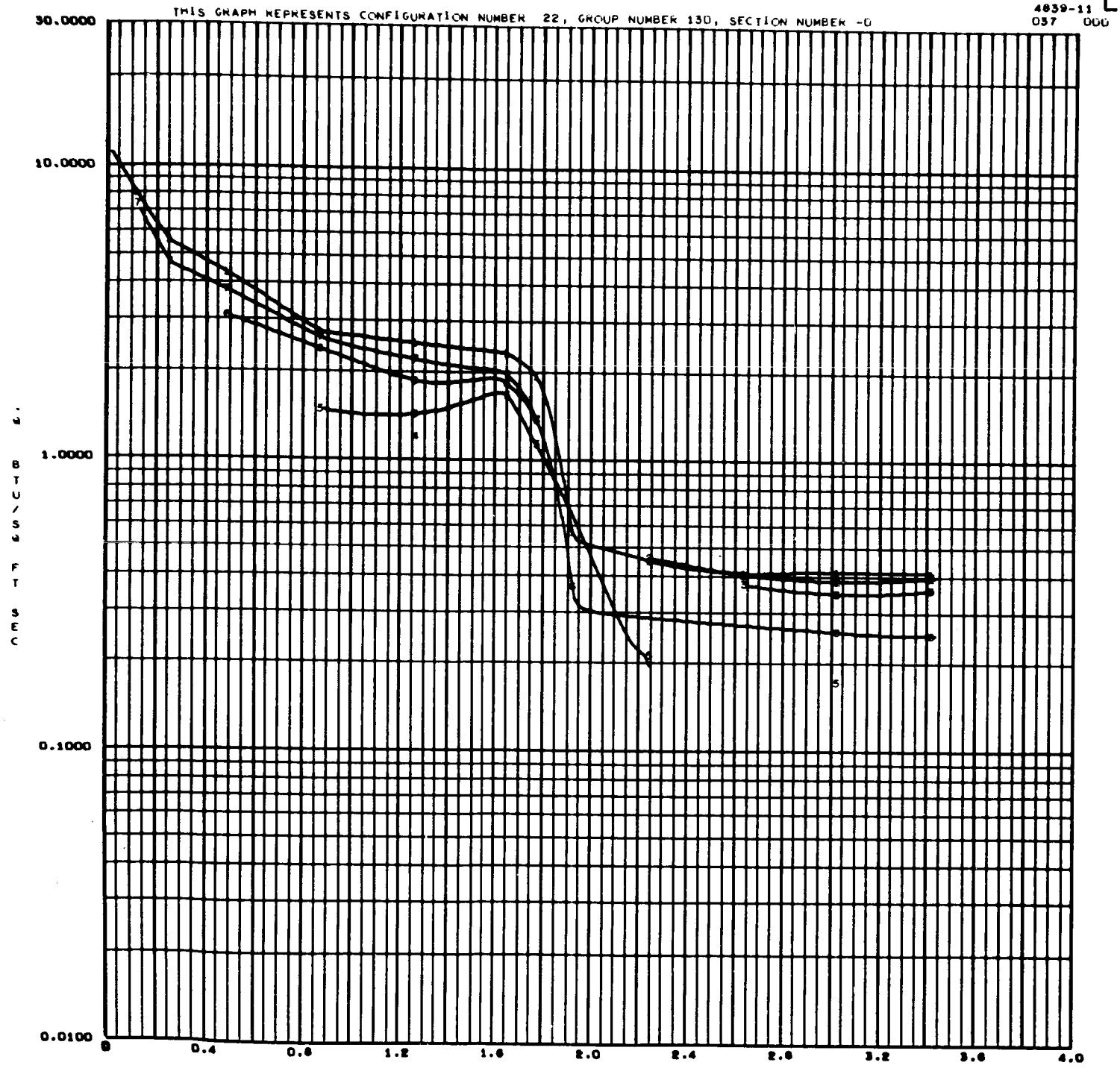
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 130
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1660.50 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

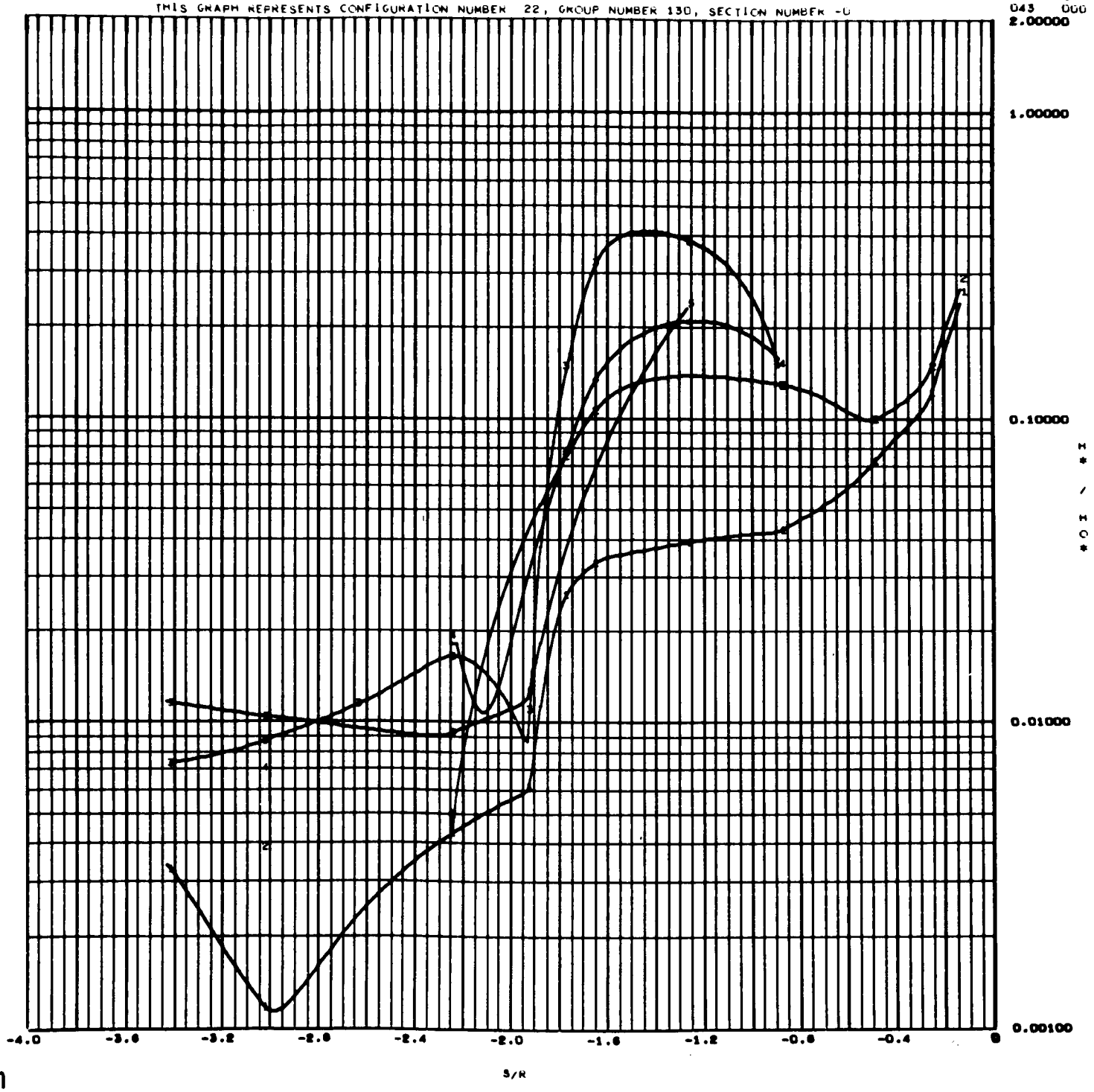
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 130
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1660.50 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 130, SECTION NUMBER -0

4839-11 L
043 000



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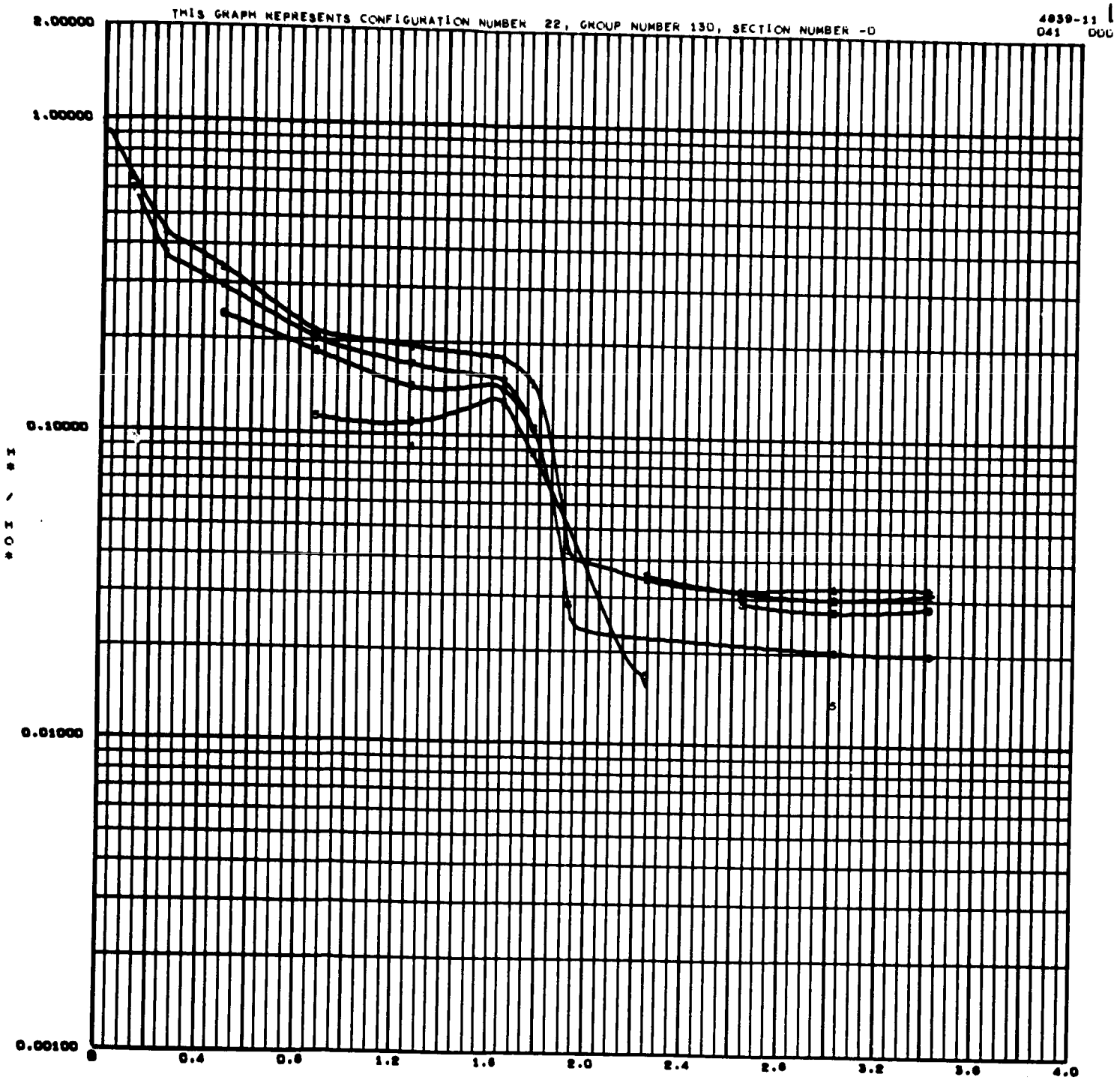
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 130
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0277 x 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1660.50 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

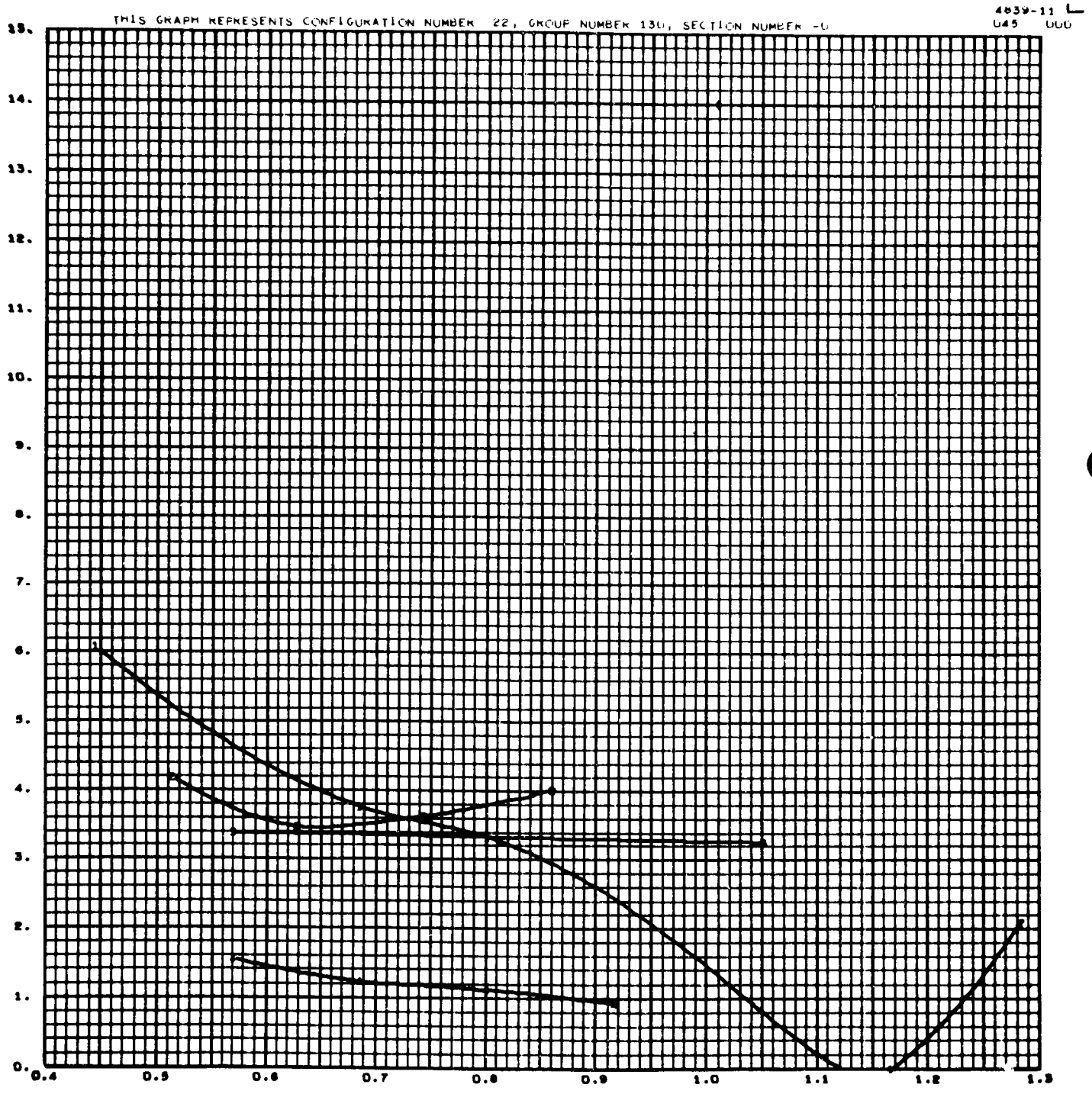
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 130
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0277 x 10^6
H_O^* 0.04333 LB/FT x SEC
TOTAL TEMPERATURE 1660.50 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 130, SECTION NUMBER -0

4839-11
045 000



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[redacted]

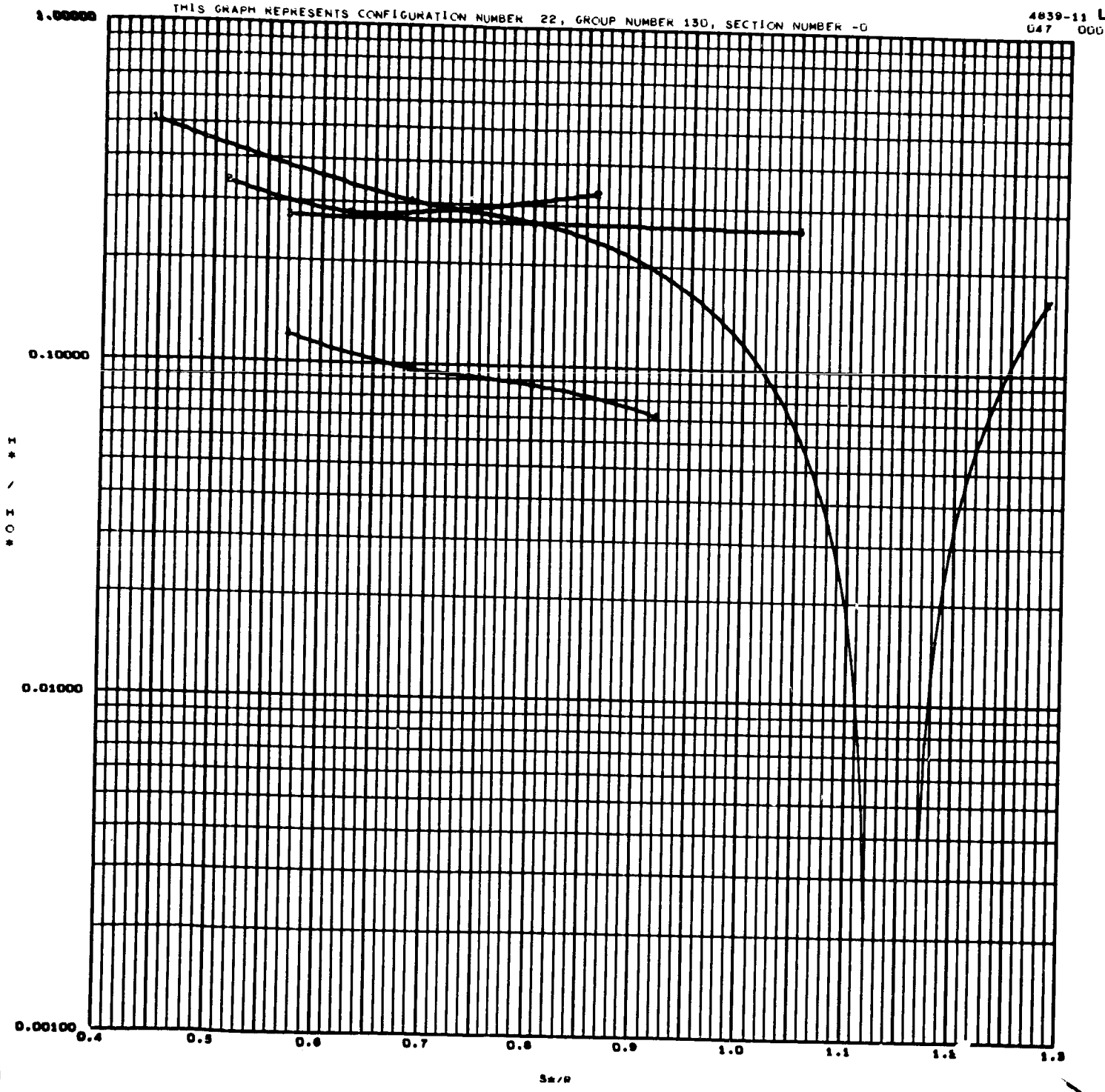
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.04
GROUP NO. 130
TOTAL PRESSURE 214.5 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1660.50 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

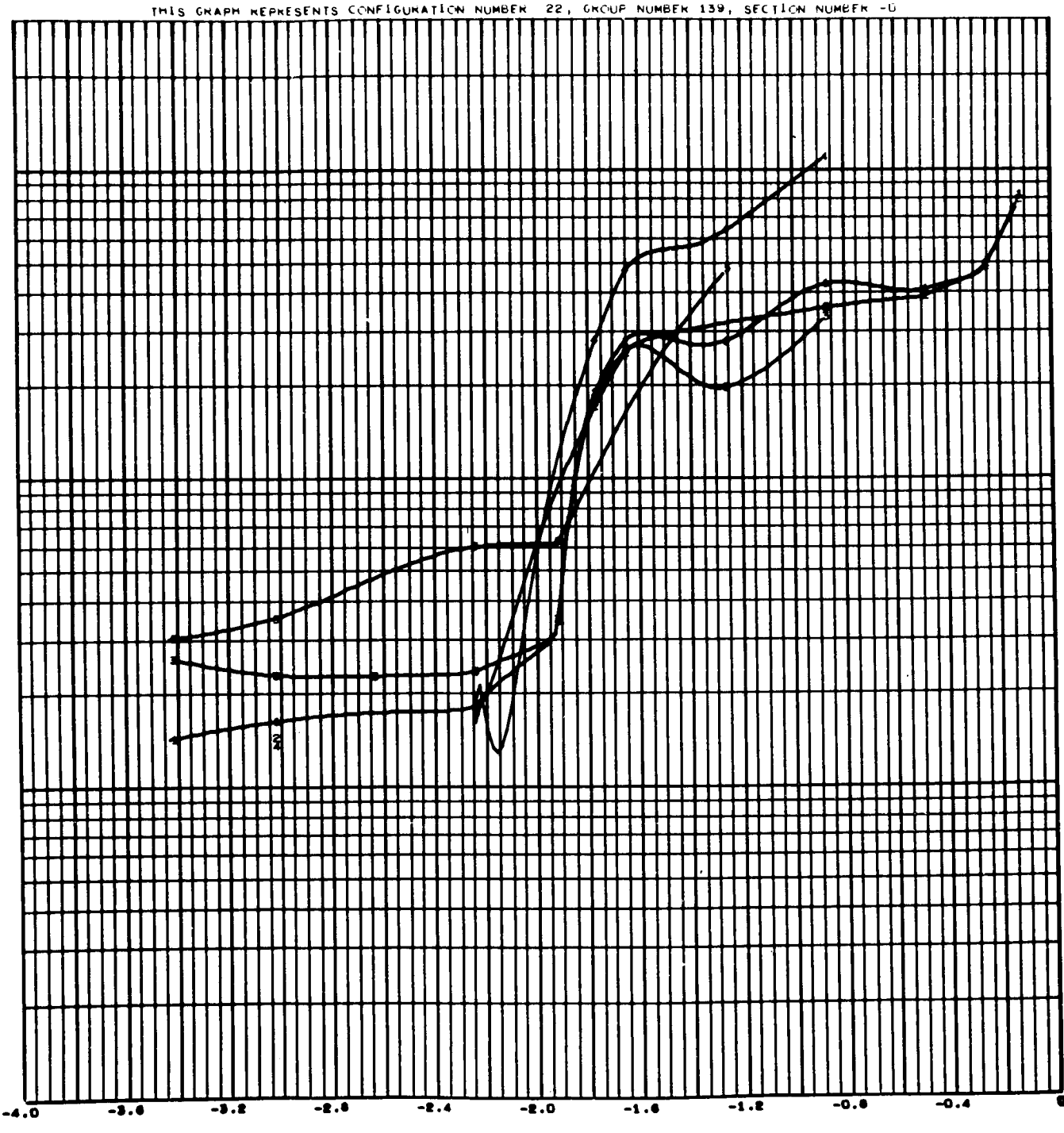
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 139
TOTAL PRESSURE 461.9 PSIA
REYNOLDS NUMBER PER INCH 0.0557 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11 L
135 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 139, SECTION NUMBER -0



[redacted]

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HEAT TRANSFER TEST

APOLLO

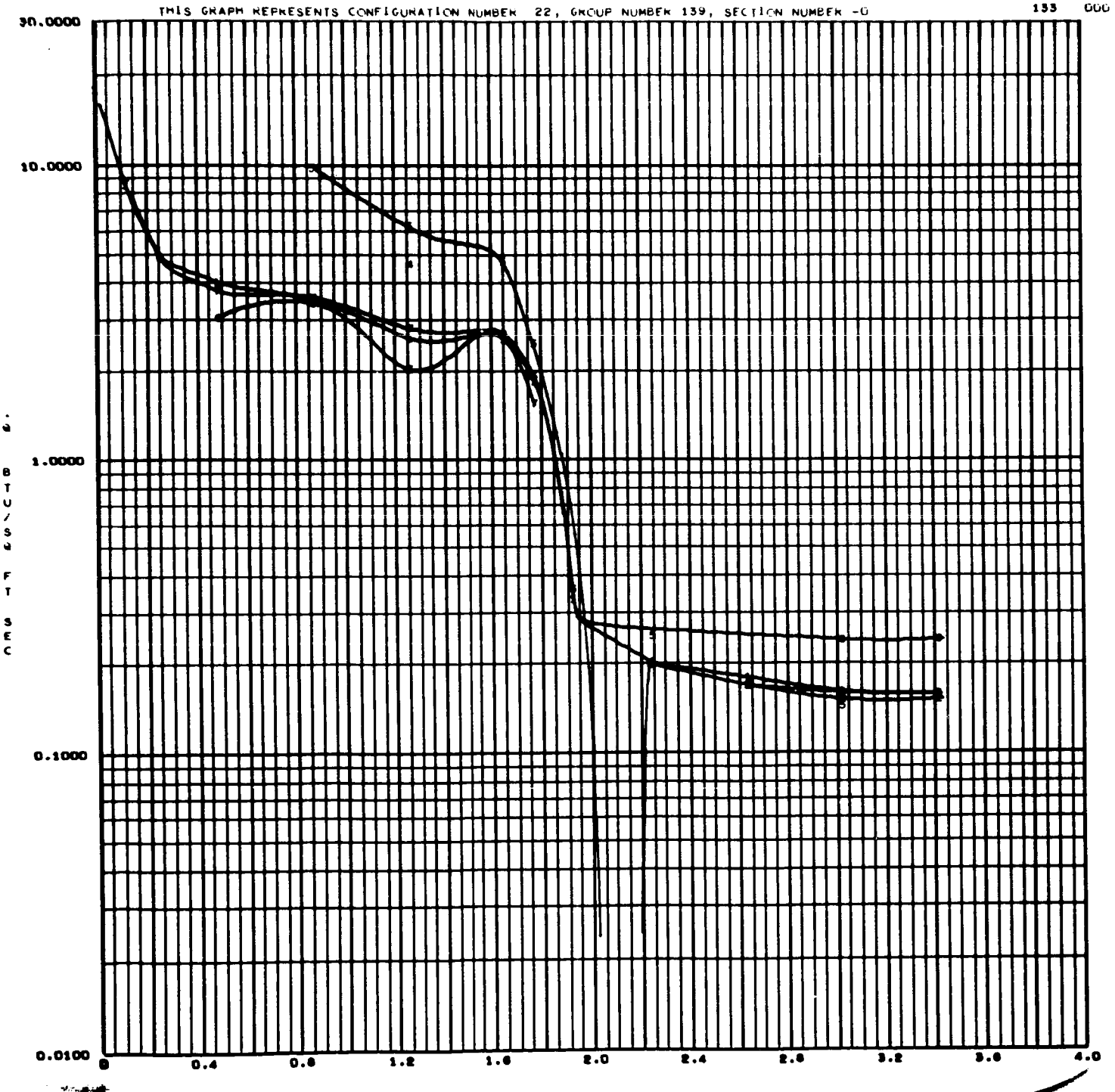
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 139
TOTAL PRESSURE 461.9 PSIA
REYNOLDS NUMBER PER INCH 0.0557 x 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11
133 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 139, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 139
TOTAL PRESSURE 461.9 PSIA
REYNOLDS NUMBER PER INCH 0.0557 x 10^6
M_0^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11
139 000
THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 139, SECTION NUMBER -0

2.00000
1.00000
0.10000
0.01000
0.00100

-4.0 -3.6 -3.2 -2.8 -2.4 -2.0 -1.6 -1.2 -0.8 -0.4 0

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HEAT TRANSFER TEST

APOLLO

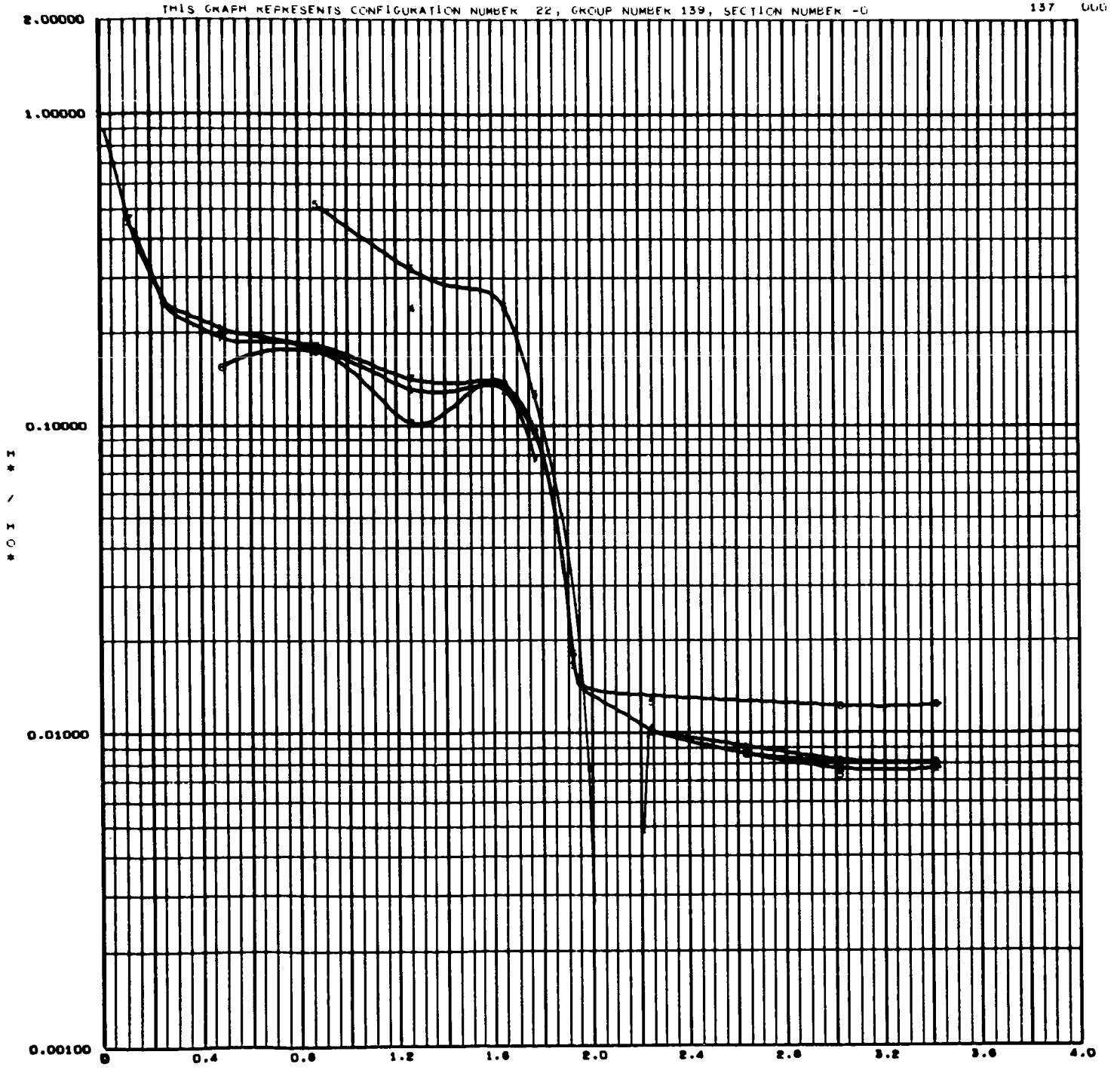
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 139
TOTAL PRESSURE 461.9 PSIA
REYNOLDS NUMBER PER INCH 0.0557 x 10^6
μ_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
137 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 139, SECTION NUMBER -0



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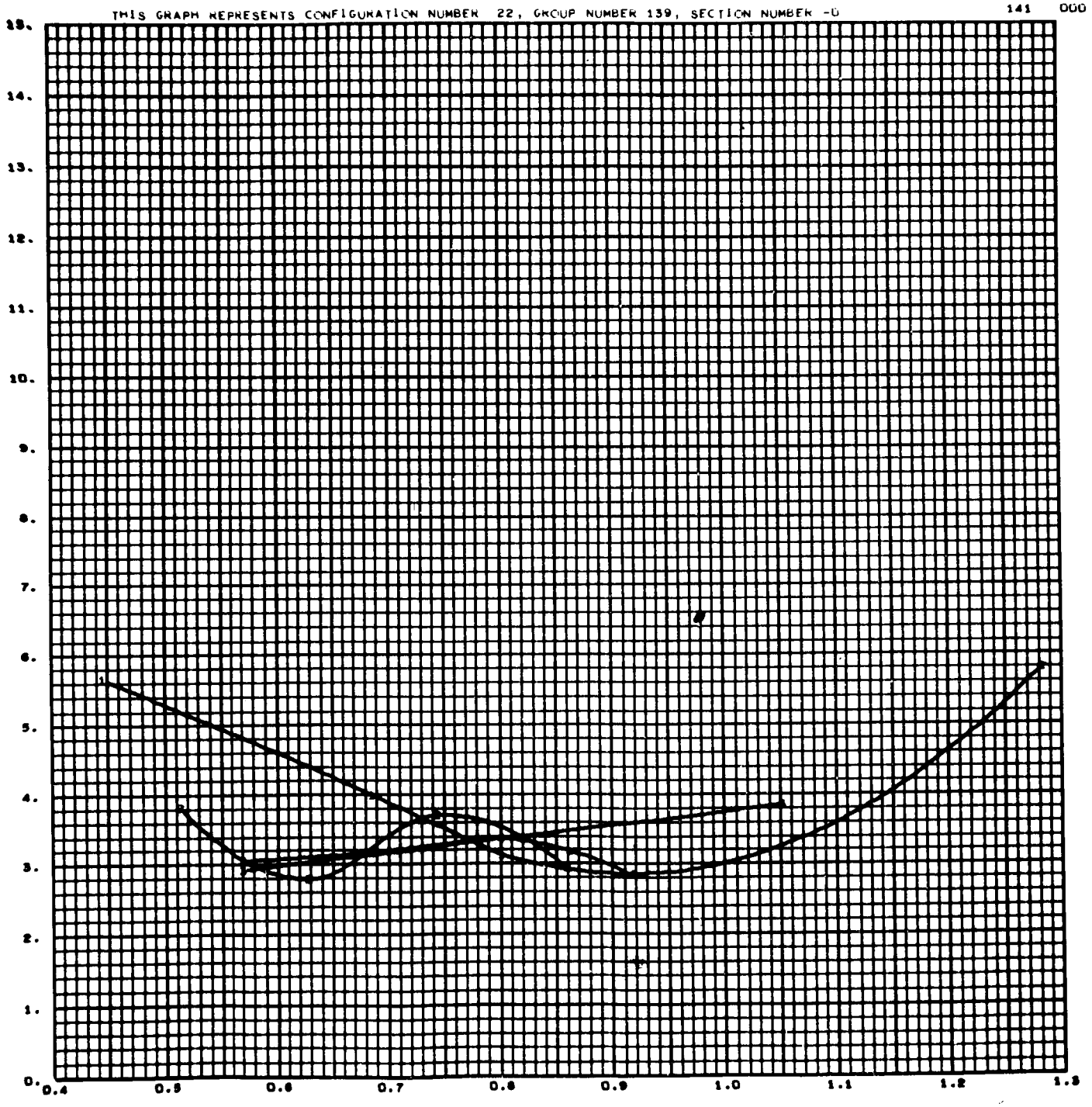
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 139
TOTAL PRESSURE 461.9 PSIA
REYNOLDS NUMBER PER INCH 0.0557 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	↓
3.0	3	↓
4.0	4	LEEWARD STRAKE DATA

4839-11
141 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 139, SECTION NUMBER -0



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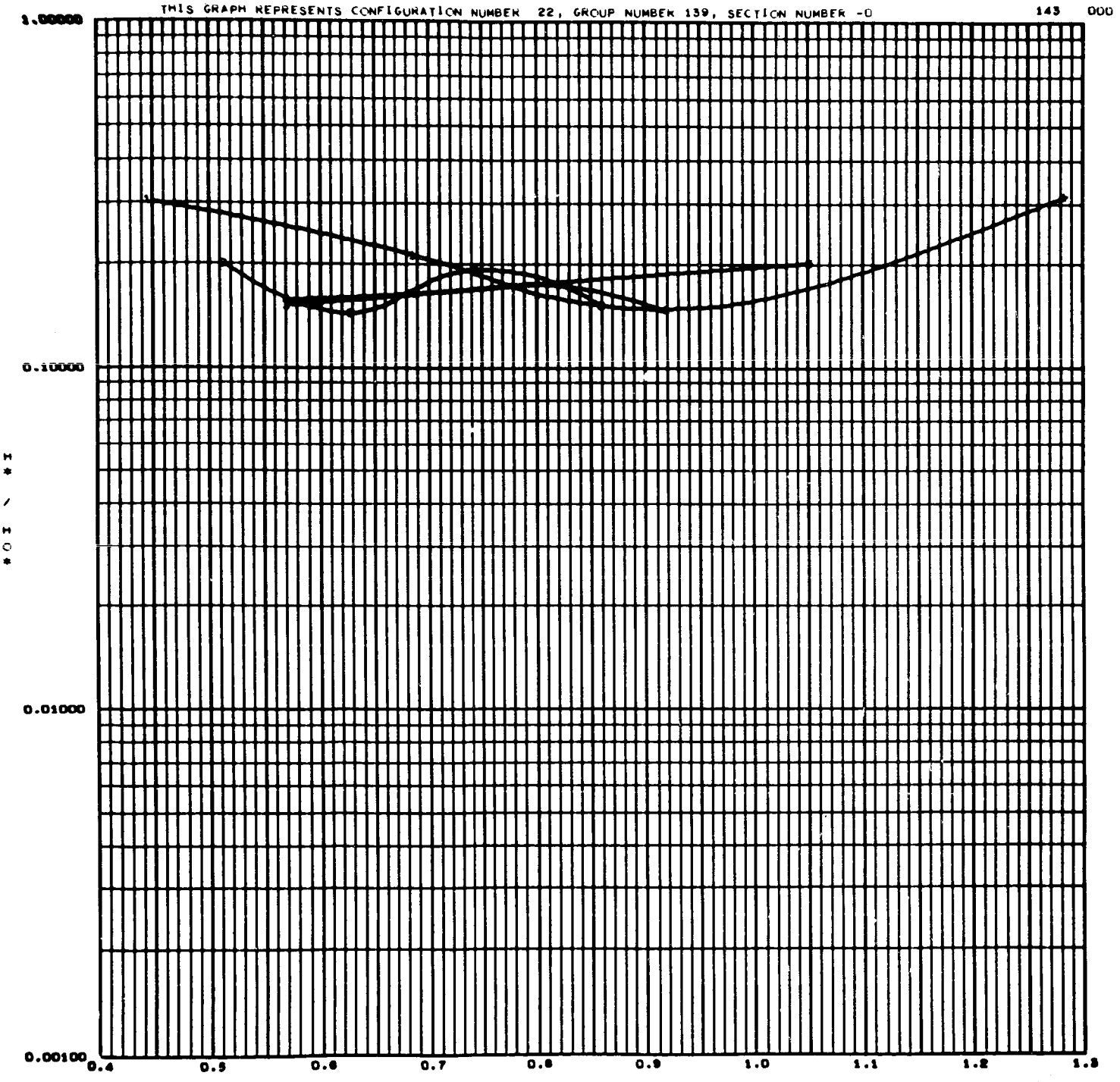
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 139
TOTAL PRESSURE 461.9 PSIA
REYNOLDS NUMBER PER INCH 0.0557 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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[redacted]

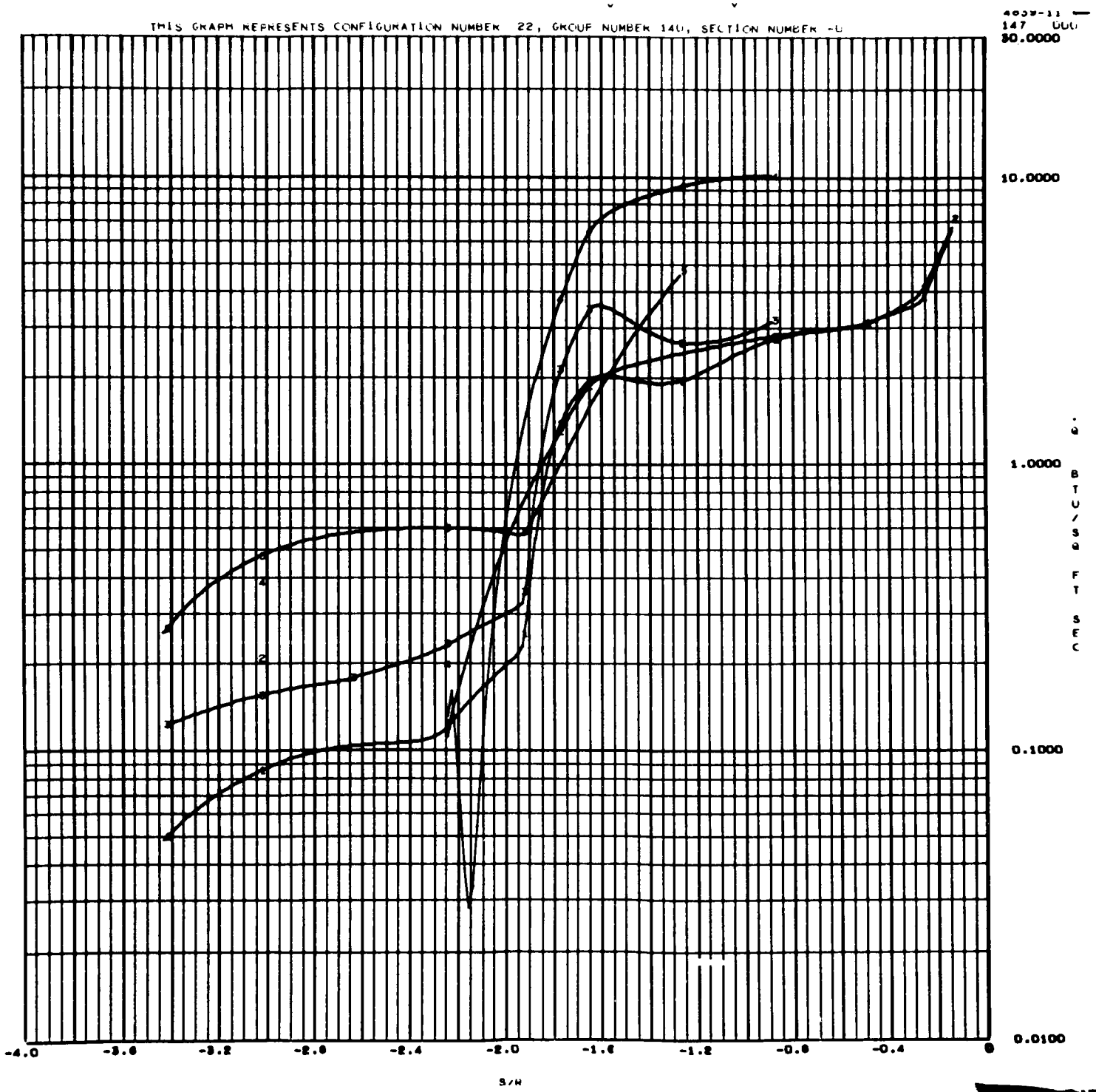
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 140
TOTAL PRESSURE 462.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
M_O * 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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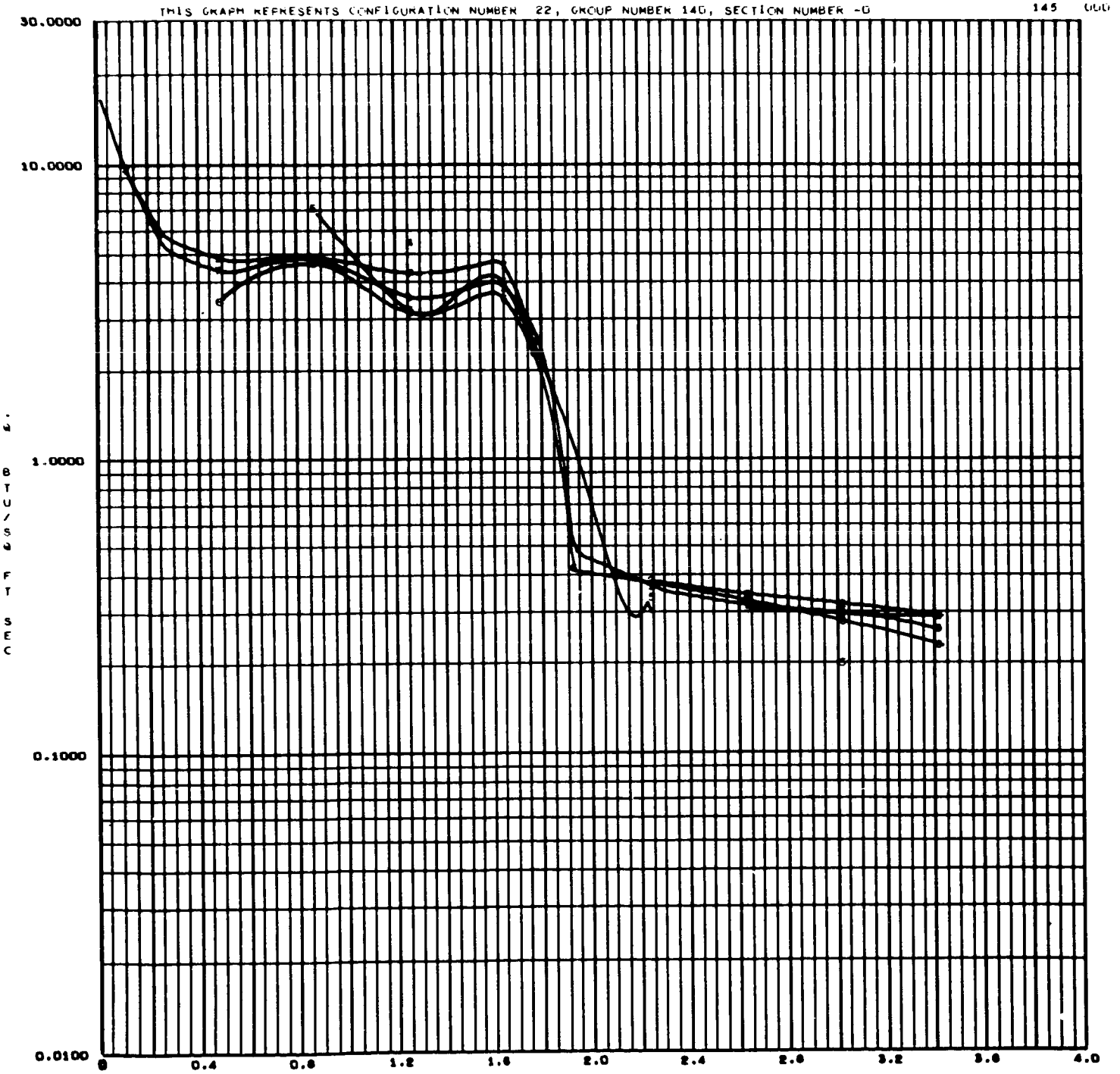
HEAT TRANSFER TEST
APOLLO
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 140
TOTAL PRESSURE 462.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
145 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 140, SECTION NUMBER -0



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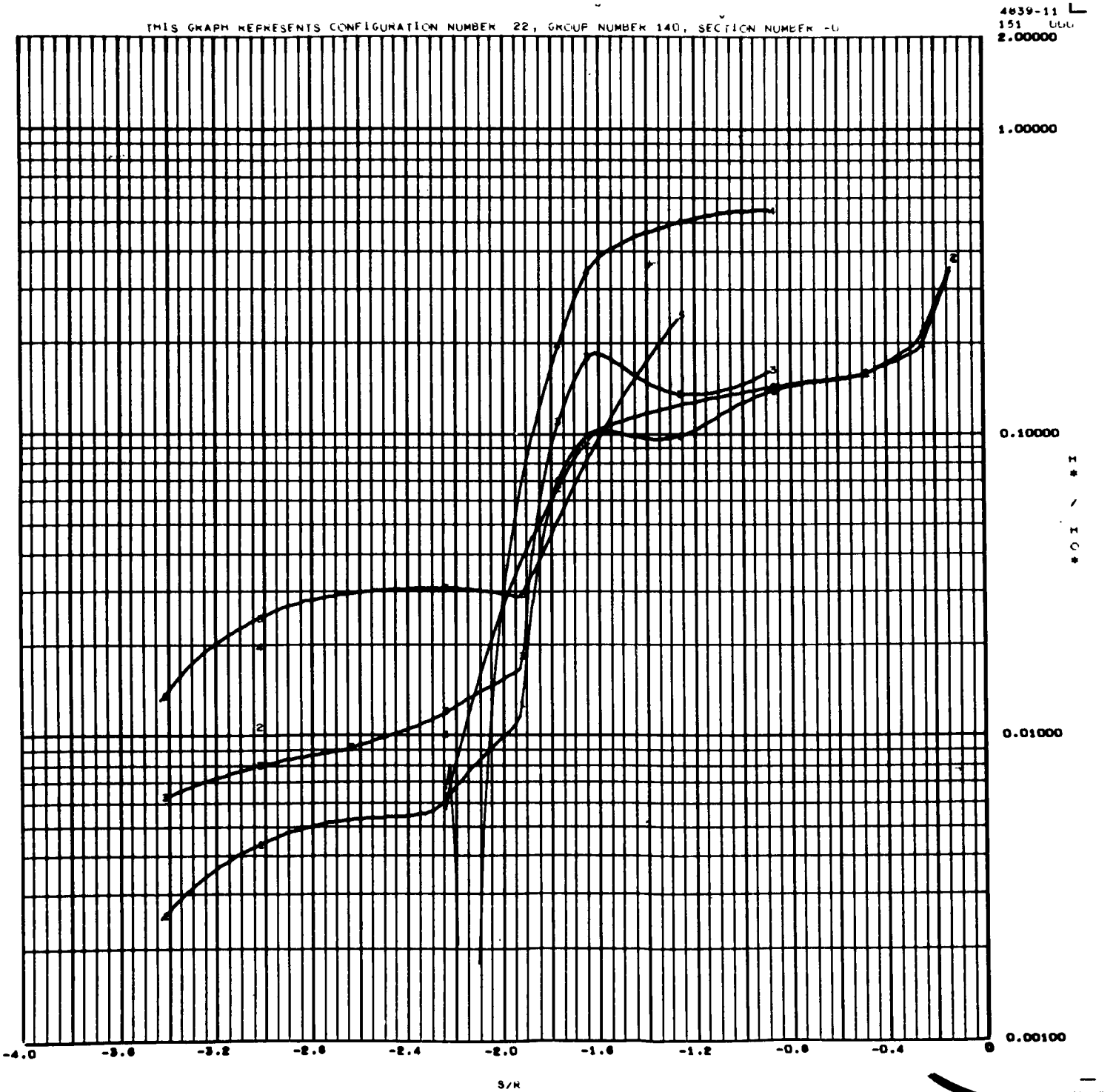
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 140
TOTAL PRESSURE 462.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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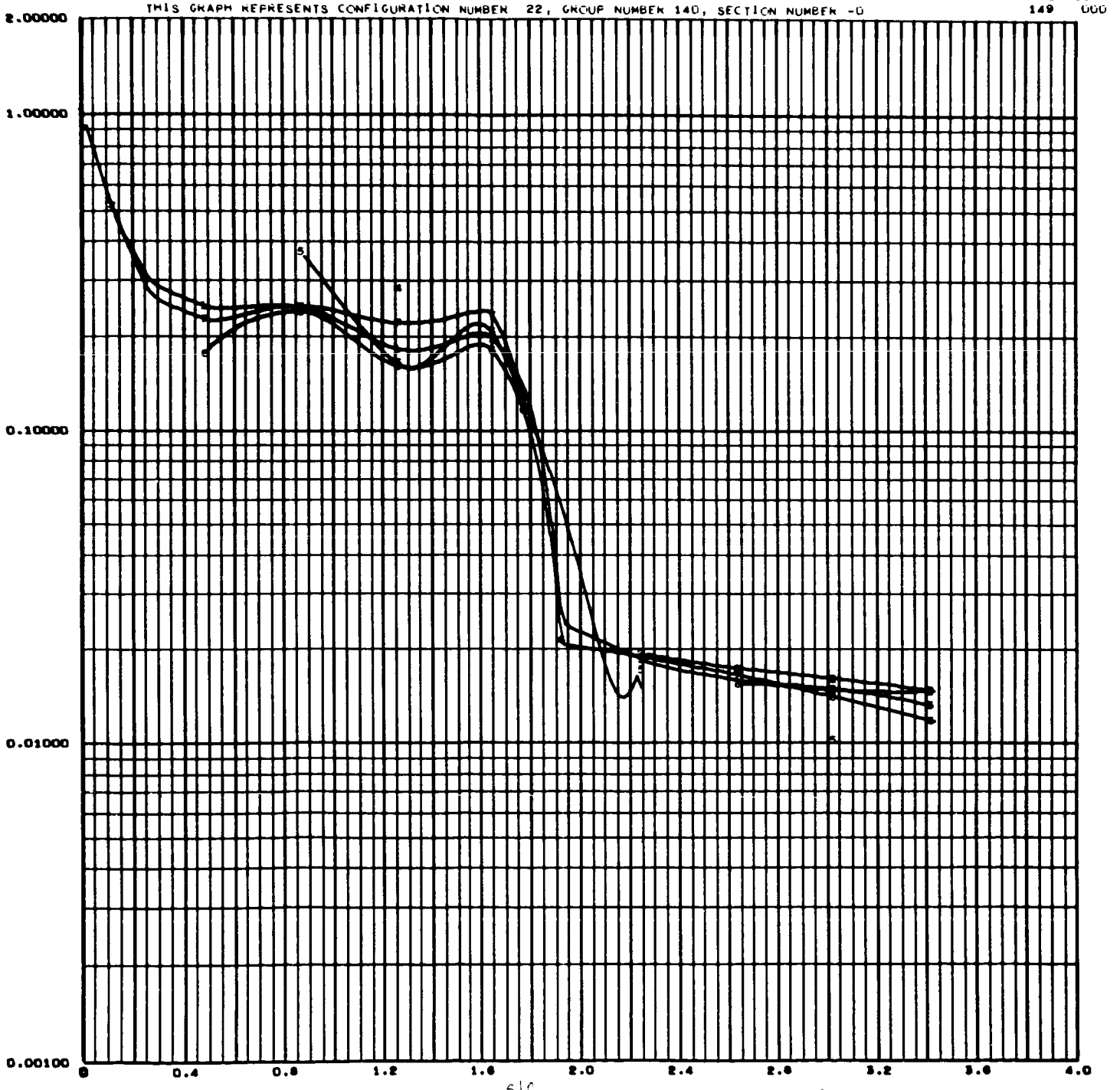
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 140
TOTAL PRESSURE 462.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 x 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

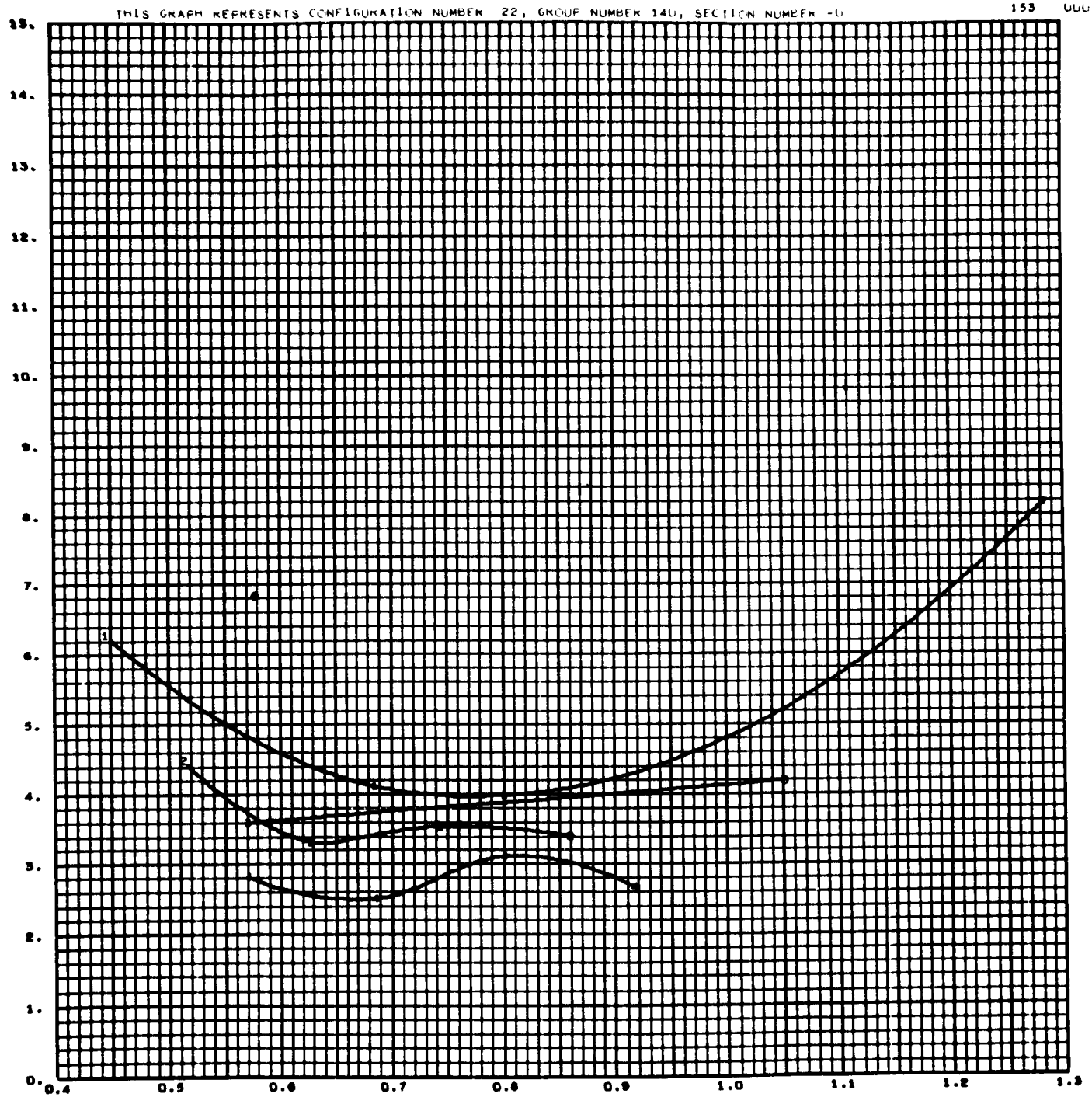
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 140
TOTAL PRESSURE 462.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	↓
3.0	3	↓
4.0	4	LEEWARD STRAKE DATA

4839-11 L
153 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 140, SECTION NUMBER -0



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HEAT TRANSFER TEST

APOLLO

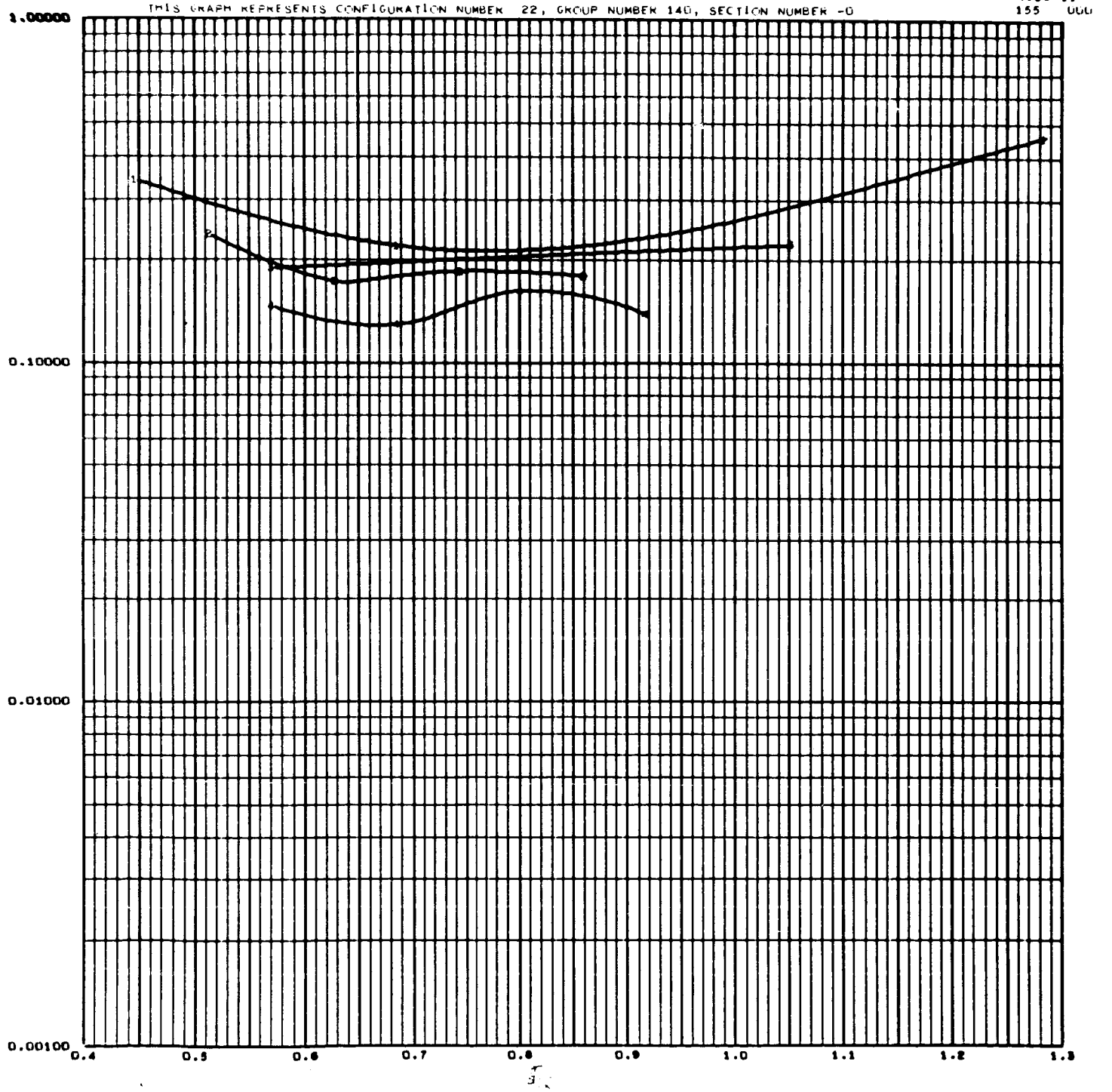
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 140
TOTAL PRESSURE 462.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 140, SECTION NUMBER -0

4839-11
155 000



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APOLLO

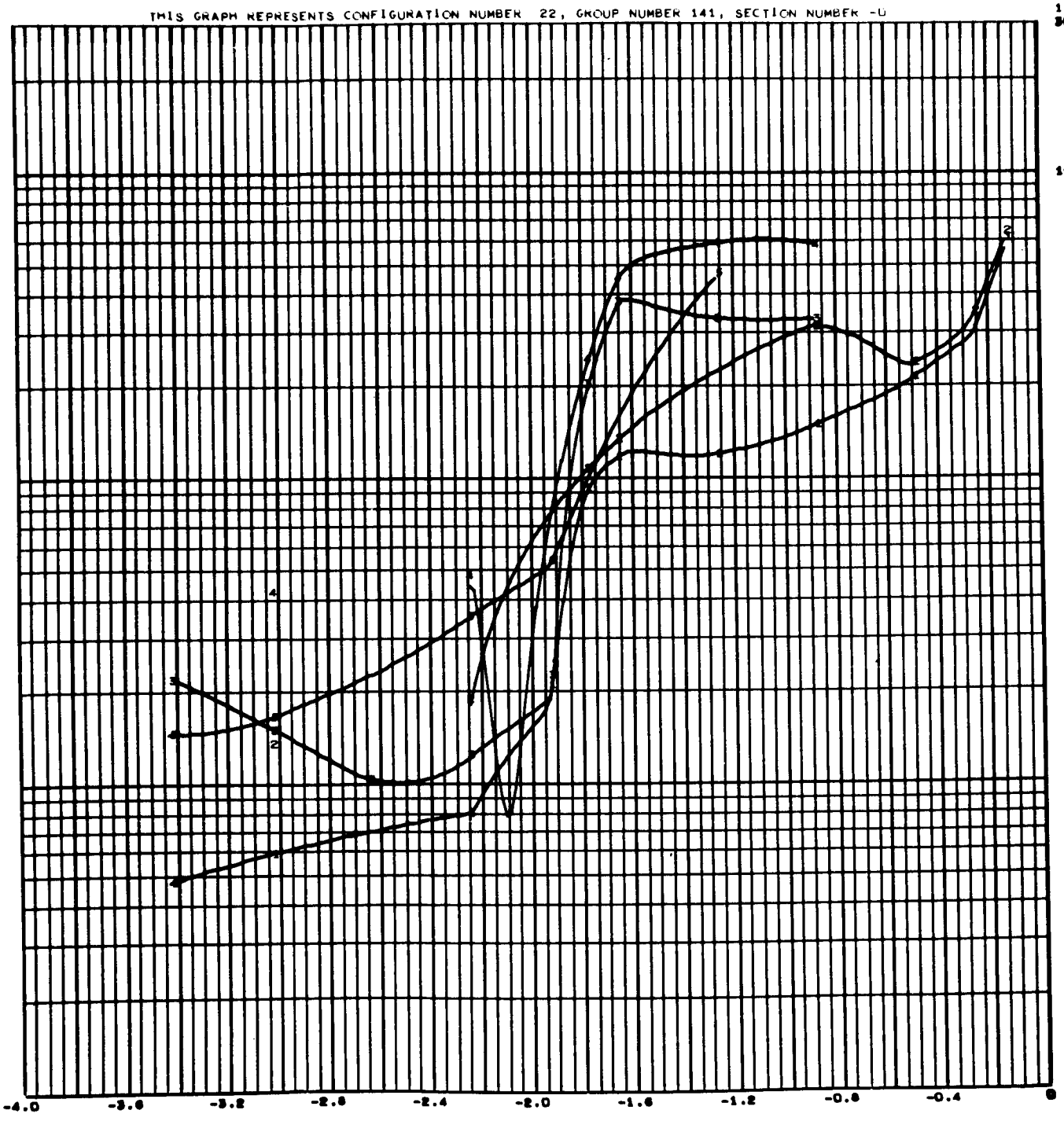
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 141
TOTAL PRESSURE 463.2 PSIA
REYNOLDS NUMBER PER INCH 0.0559 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11
159 DL

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 141, SECTION NUMBER -D



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HEAT TRANSFER TEST

APOLLO

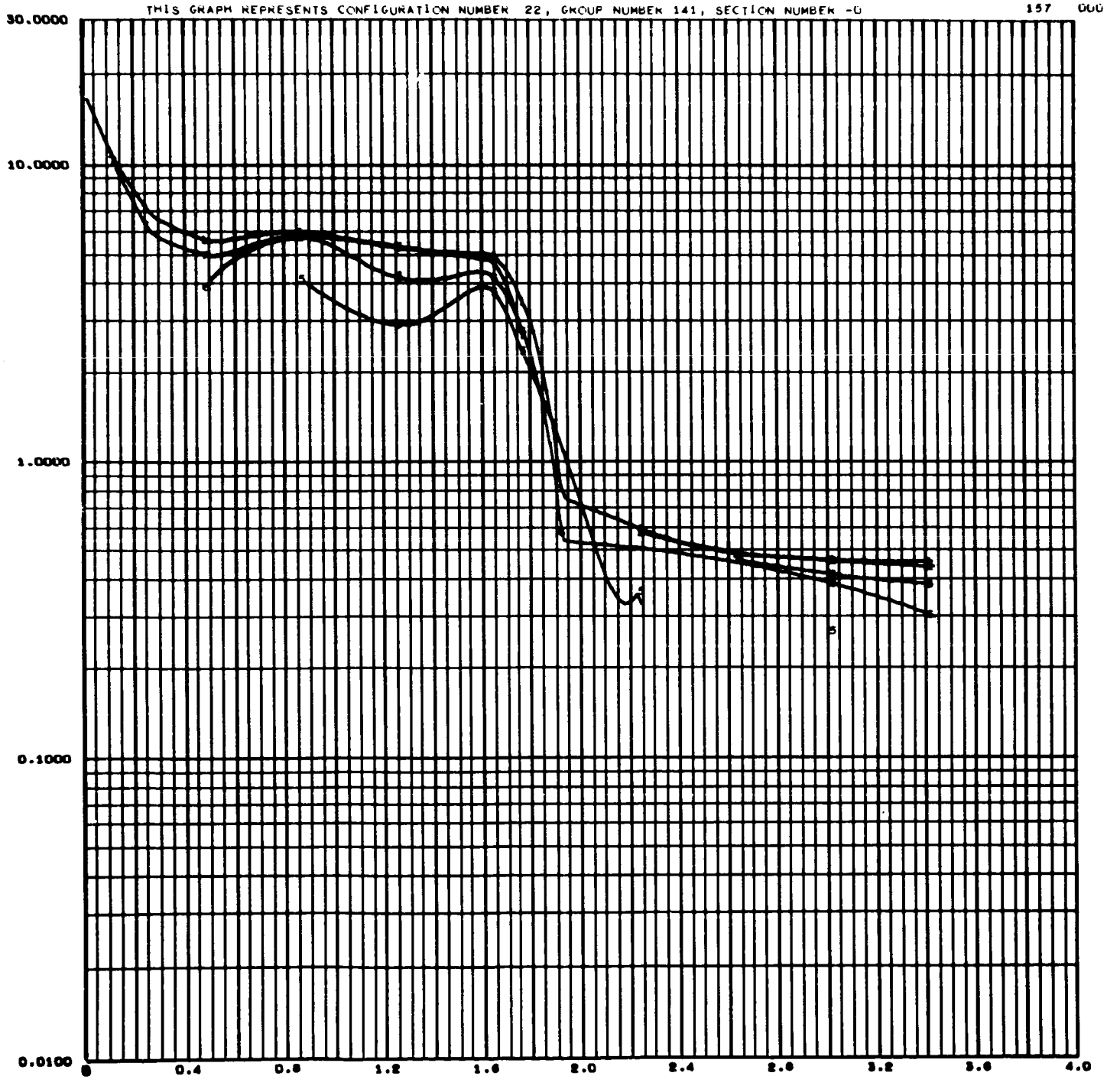
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 141
TOTAL PRESSURE 463.2 PSIA
REYNOLDS NUMBER PER INCH 0.0559 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11 L
157 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 141, SECTION NUMBER -0



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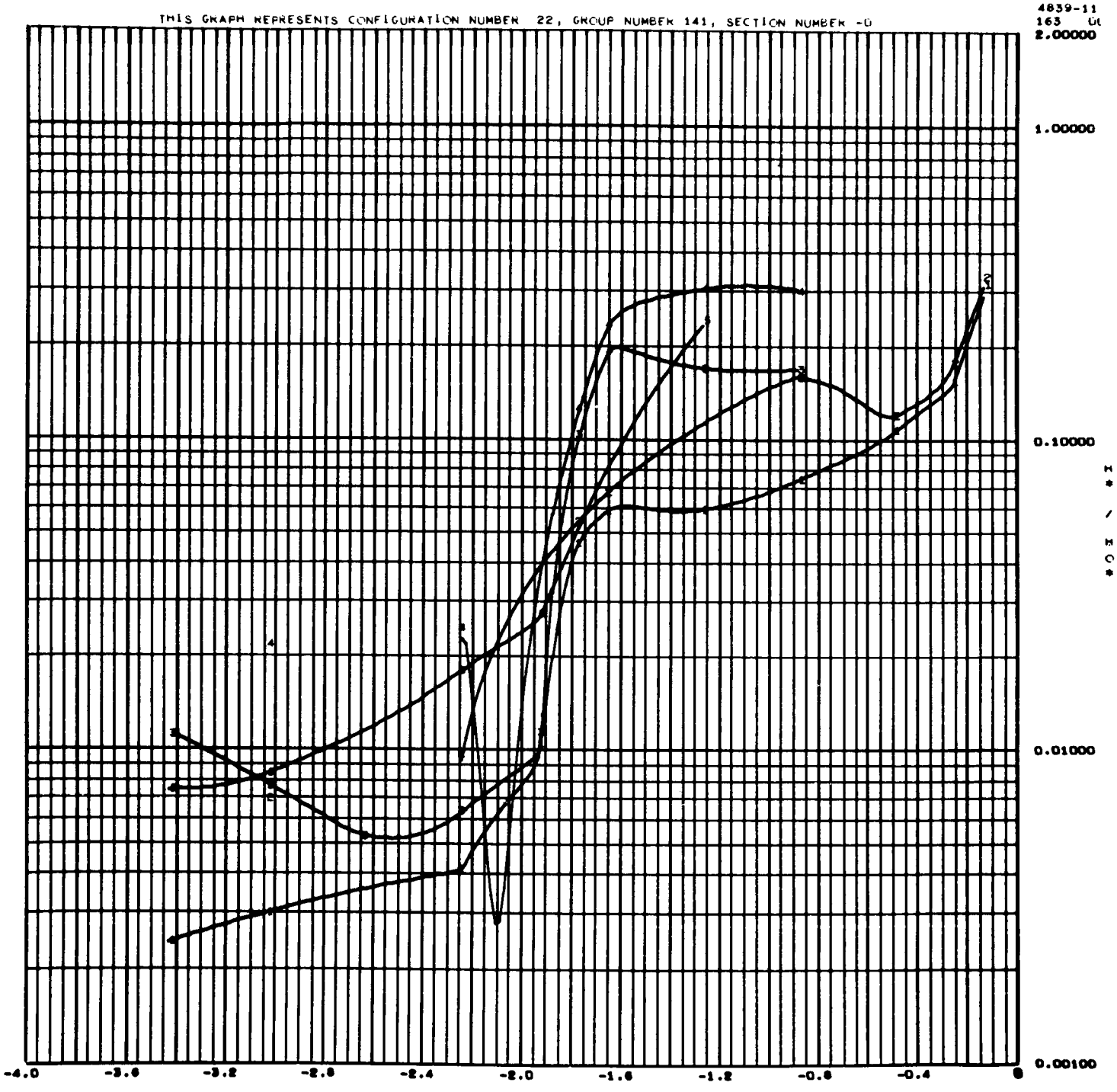
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 141
TOTAL PRESSURE 463.2 PSIA
REYNOLDS NUMBER PER INCH 0.0559 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

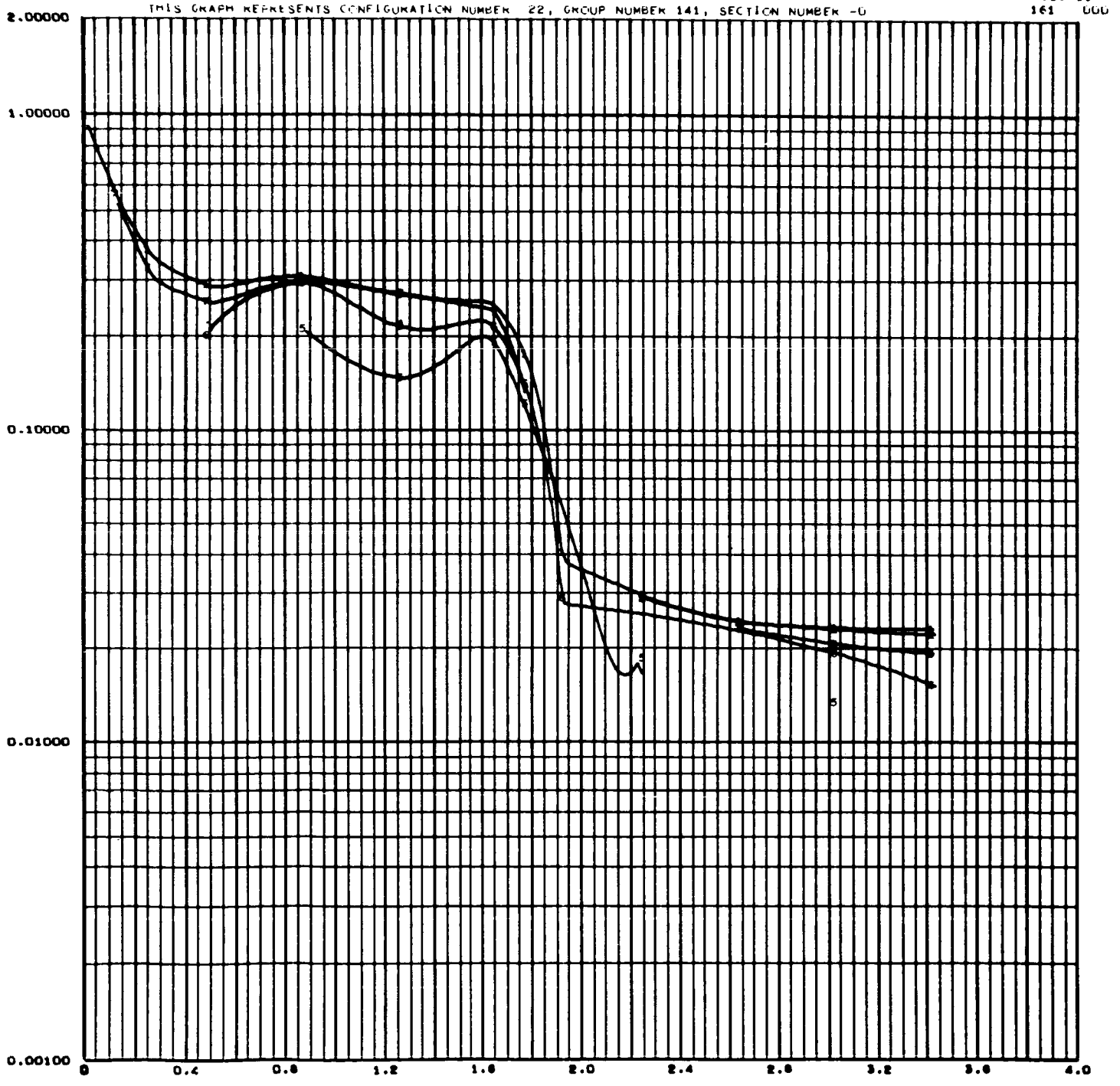
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 141
TOTAL PRESSURE 463.2 PSIA
REYNOLDS NUMBER PER INCH 0.0559 x 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
161 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 141, SECTION NUMBER -0



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[redacted]

HEAT TRANSFER TEST

APOLLO

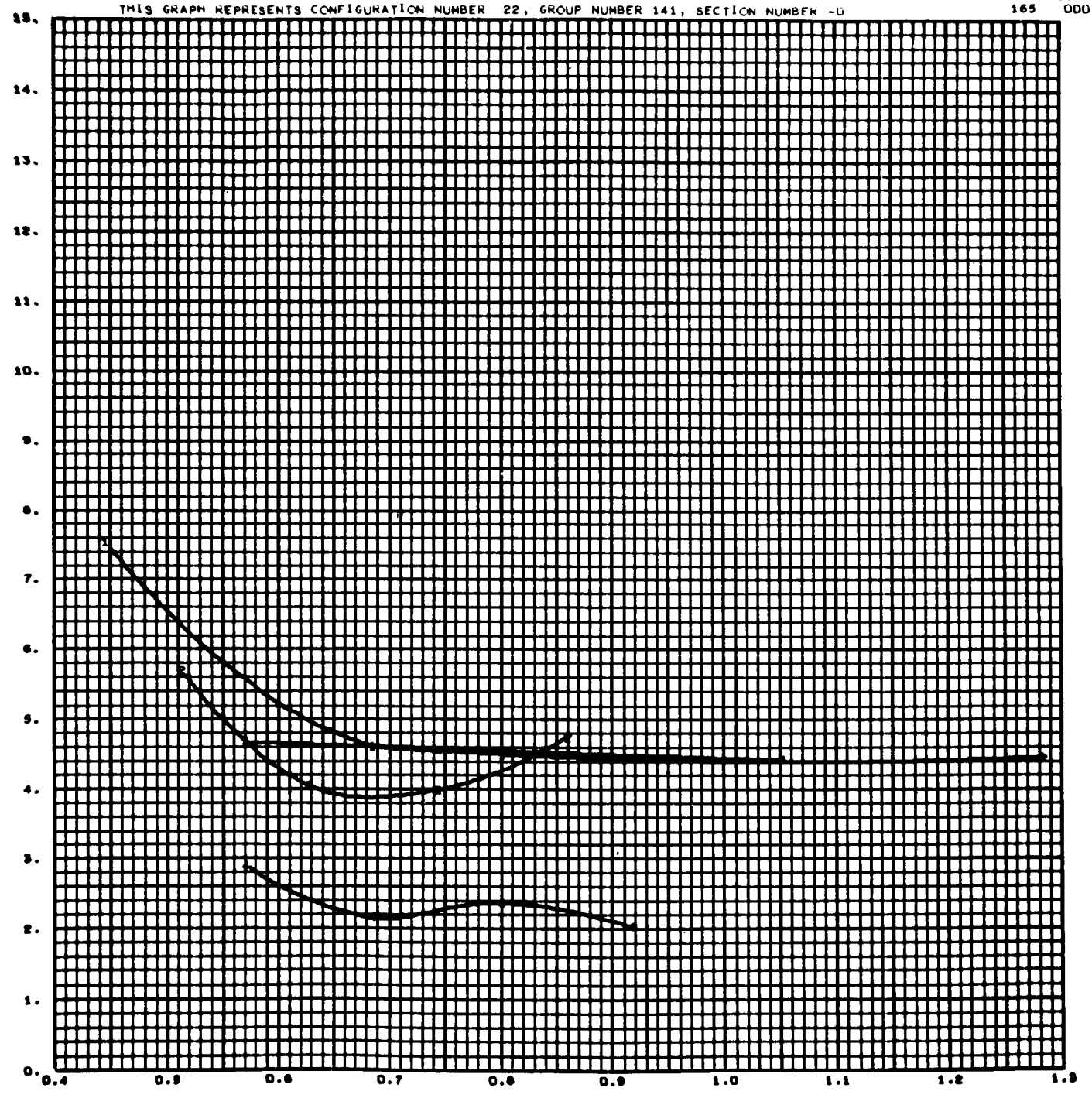
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 141
TOTAL PRESSURE 463.2 PSIA
REYNOLDS NUMBER PER INCH 0.0559 X 10^6
H_O* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	↓
4.0	4	LEEWARD STRAKE DATA

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 141, SECTION NUMBER -0

4839-11
165 000



SK/R

[redacted]

[redacted]

HEAT TRANSFER TEST

APOLLO

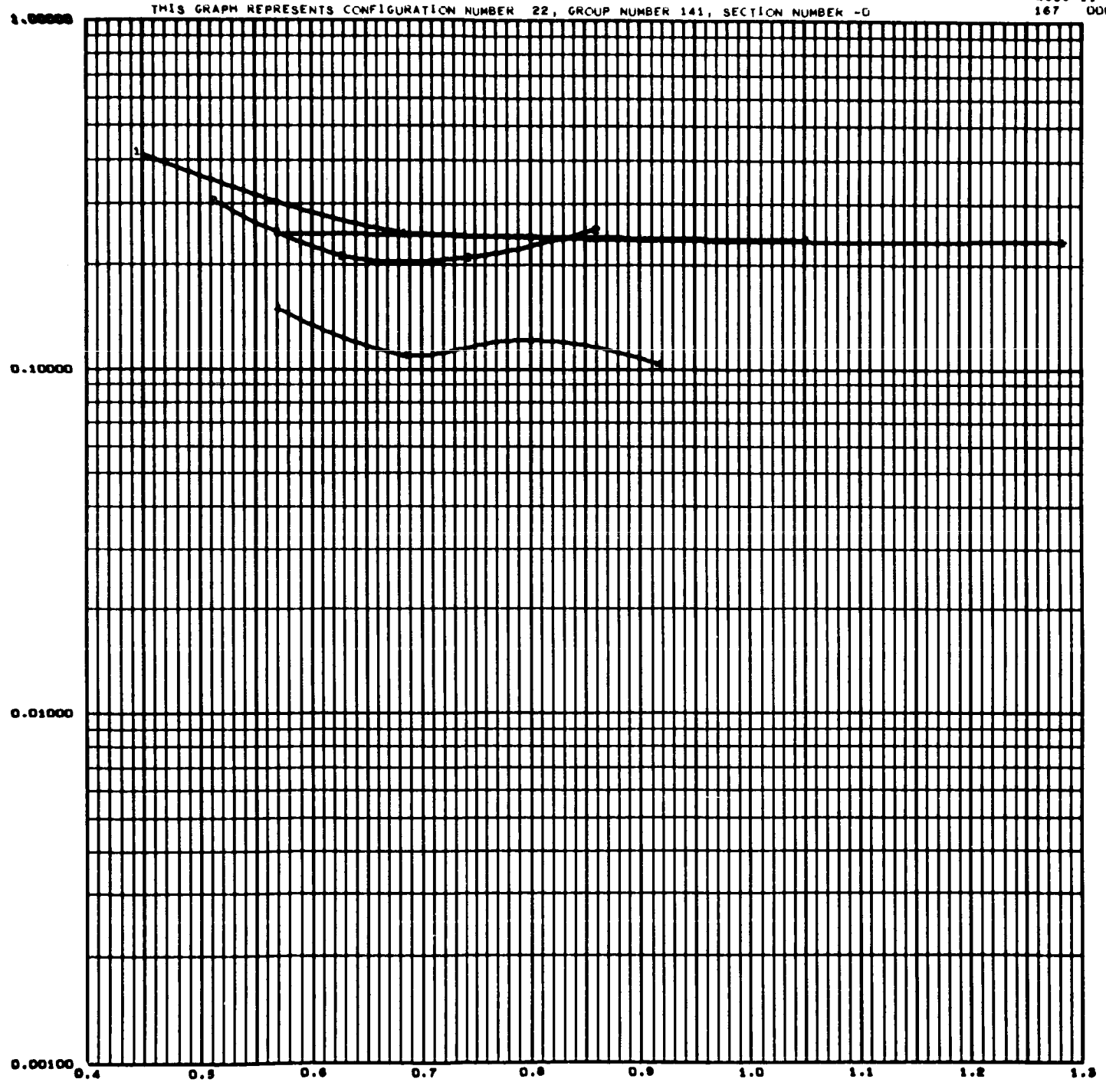
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 141
TOTAL PRESSURE 463.2 PSIA
REYNOLDS NUMBER PER INCH 0.0559 x 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 141, SECTION NUMBER -0

167 000



[redacted]

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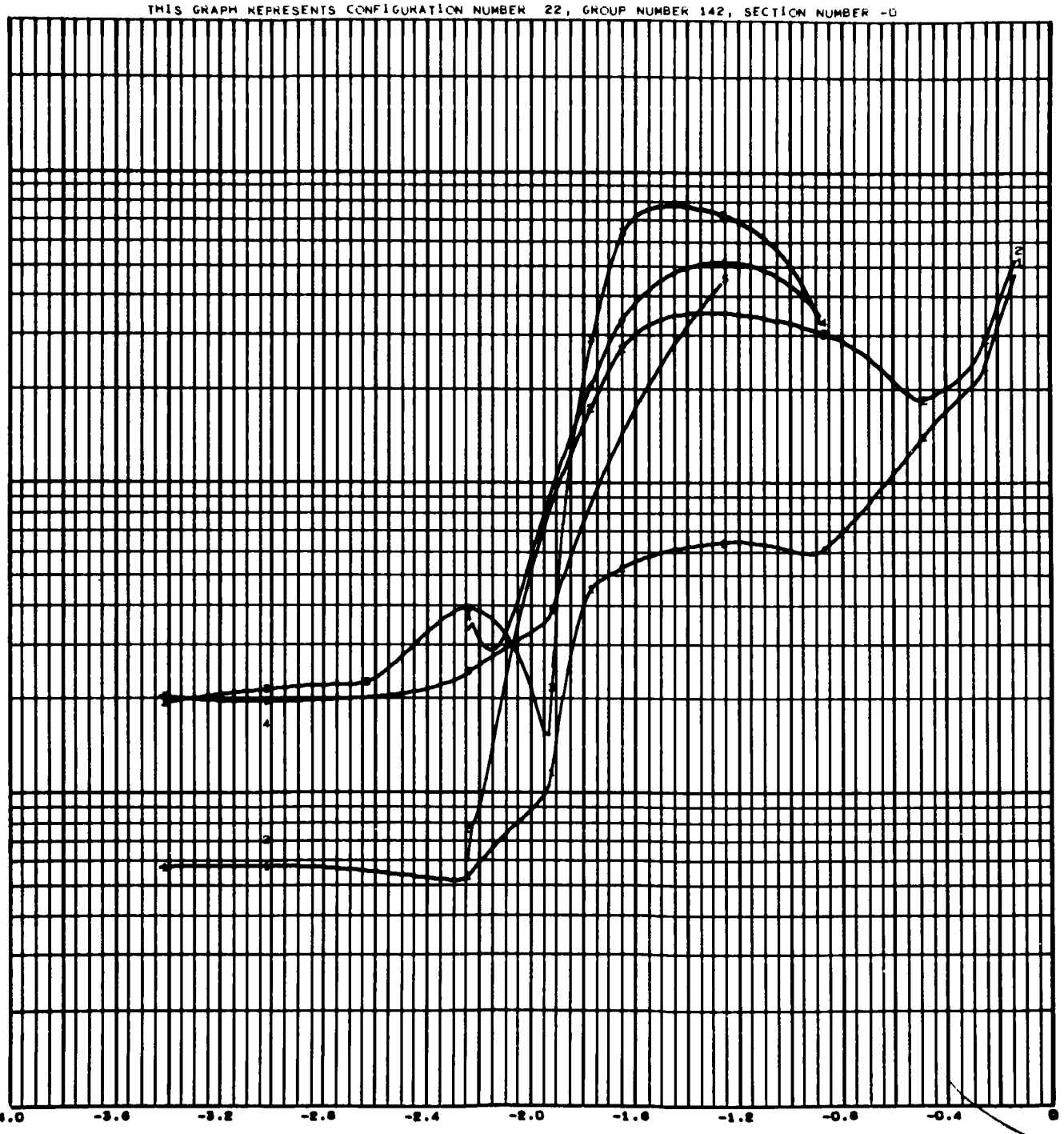
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 142
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0556 x 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

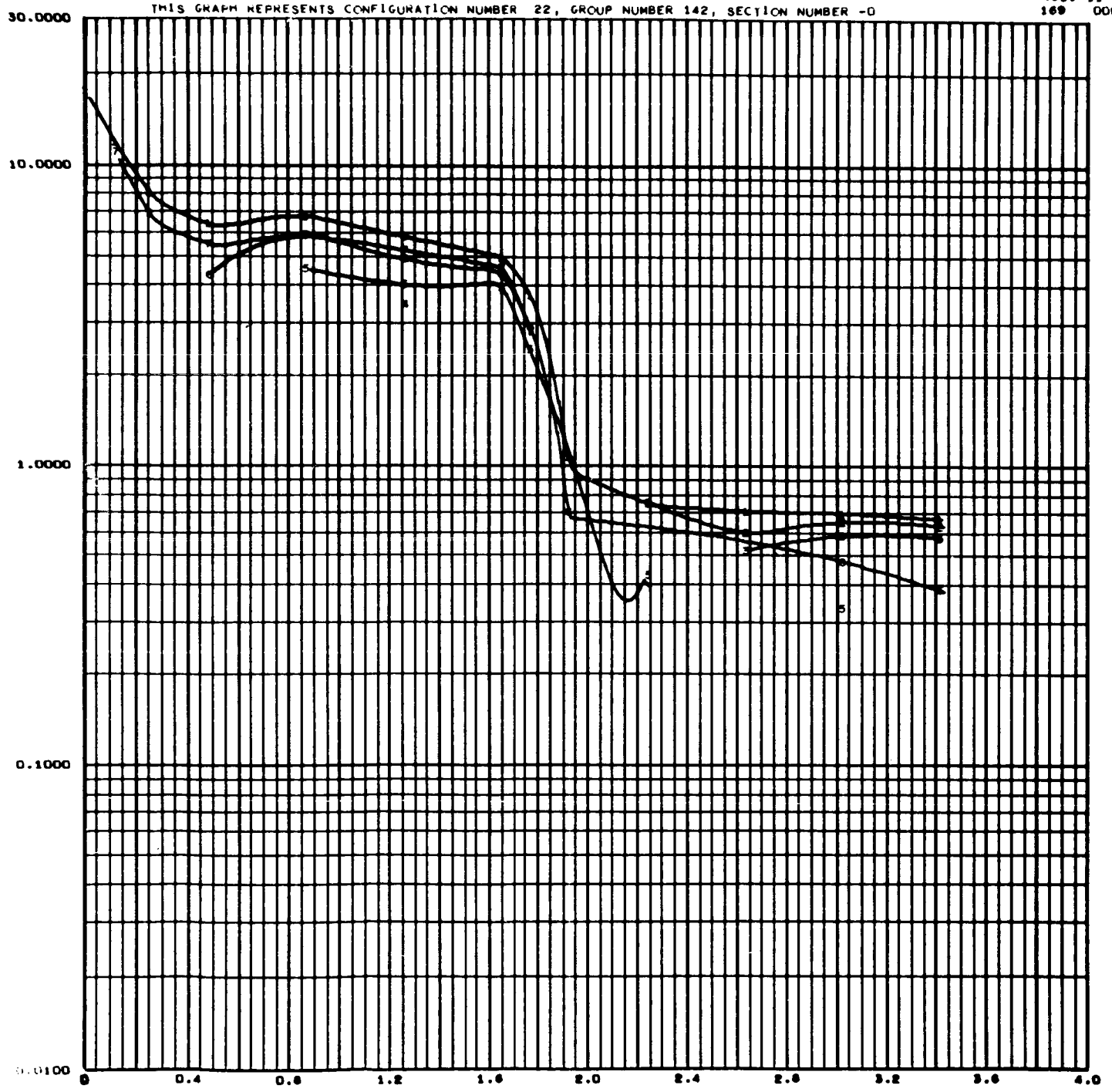
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 142
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0556 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 142, SECTION NUMBER -0

4839-11 L
169 000



[redacted]

[redacted]

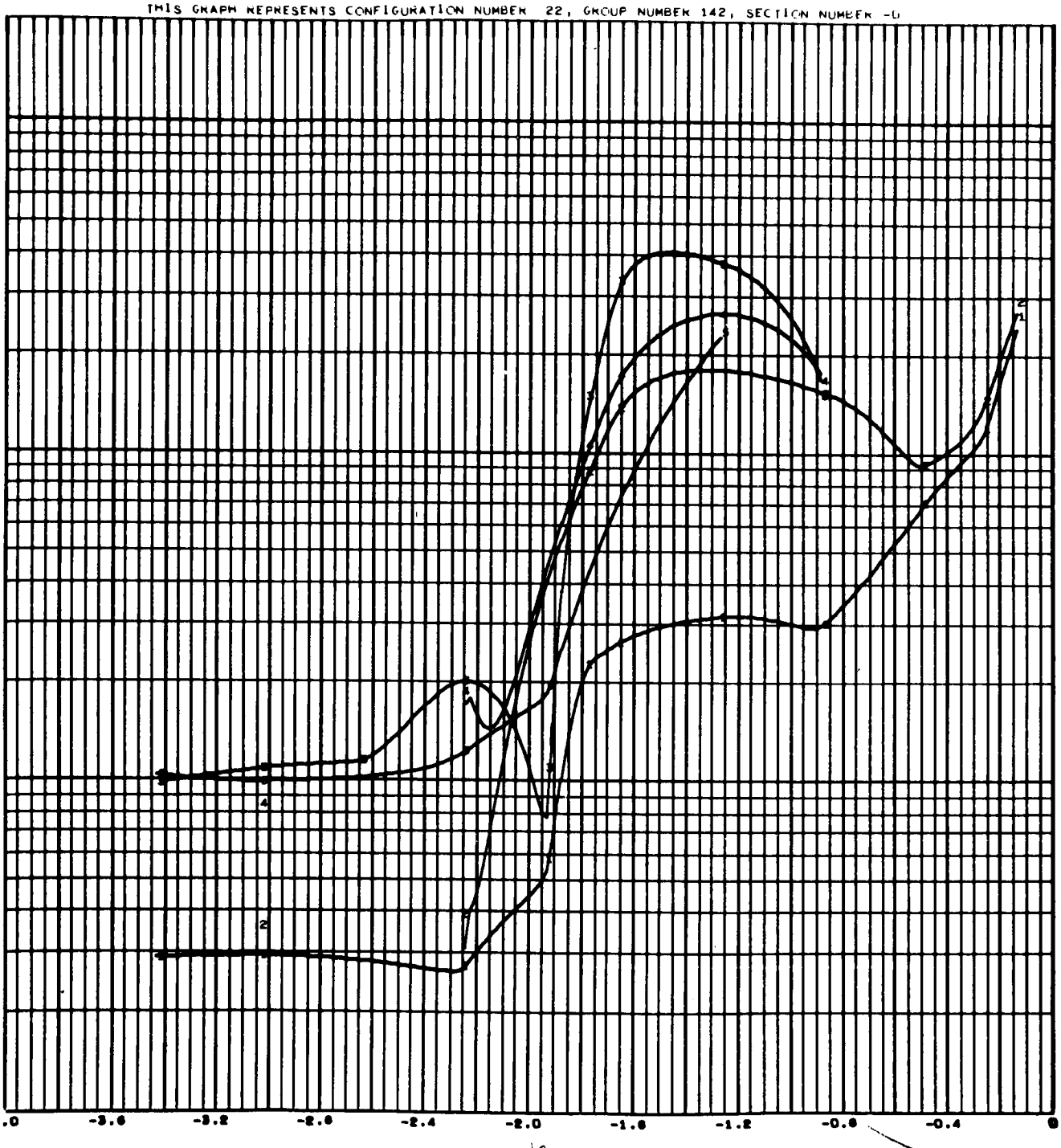
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 142
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0556 x 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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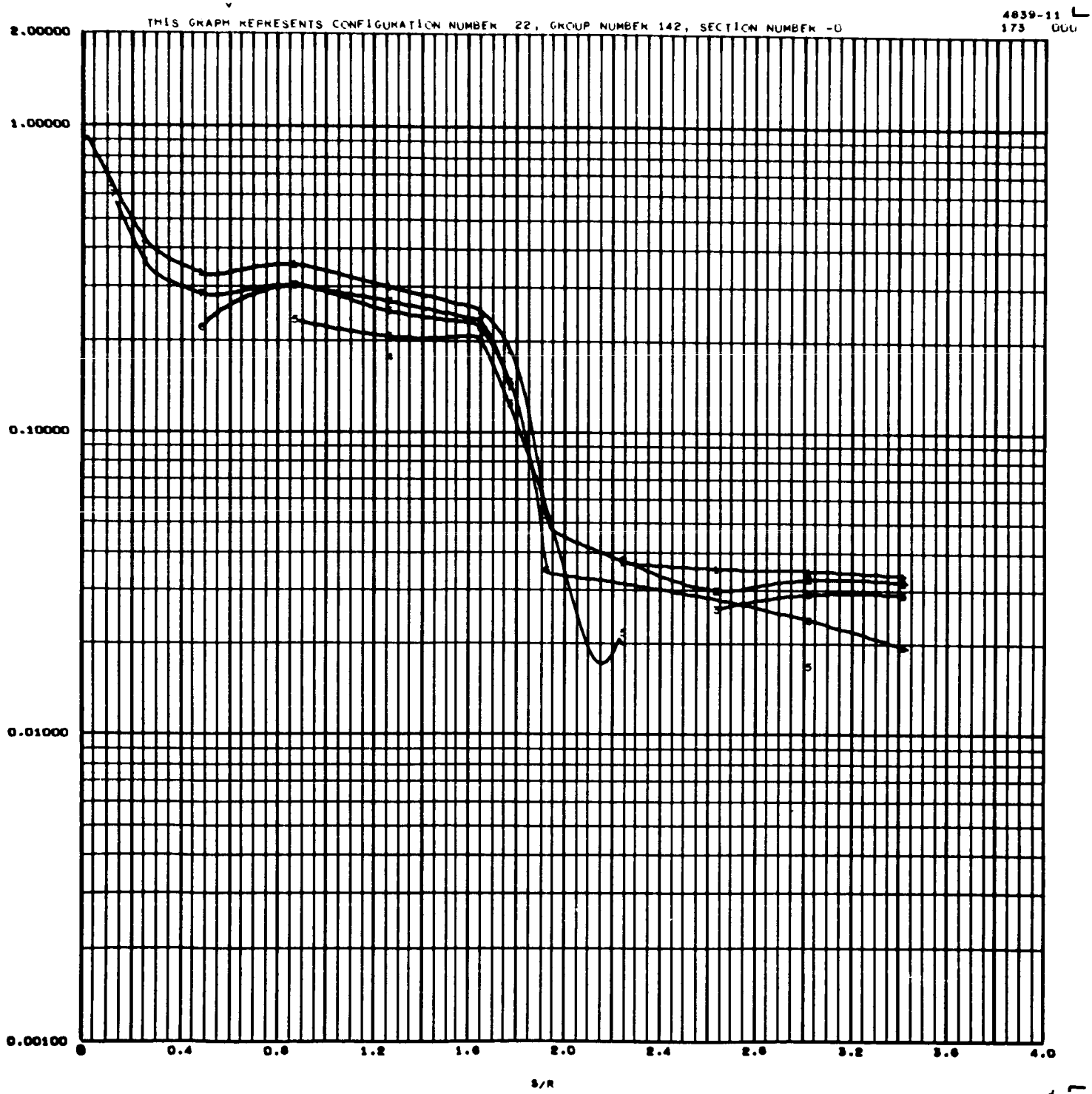
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 142
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0556 x 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

[redacted]

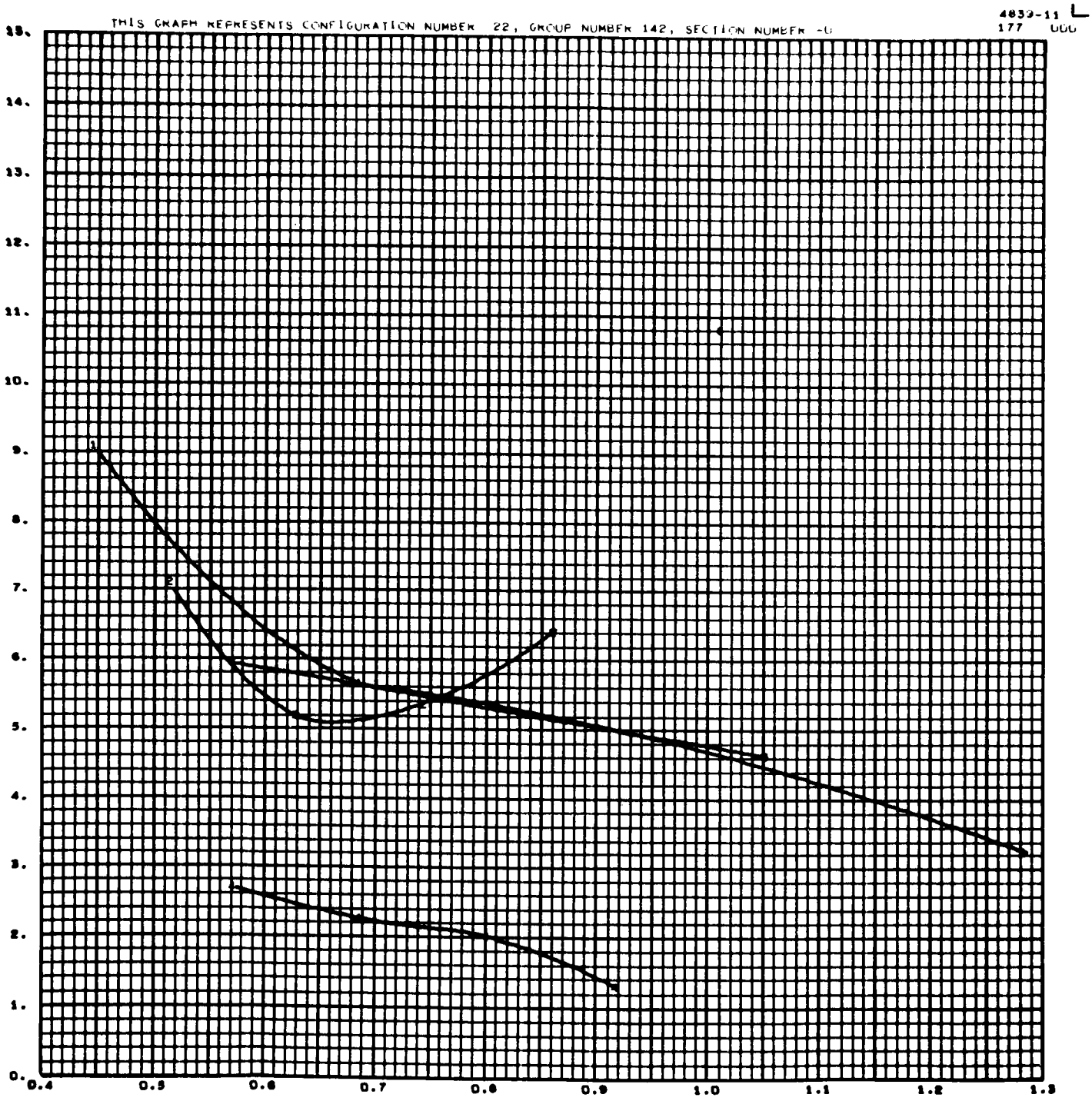
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 142
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0556 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA



[redacted]

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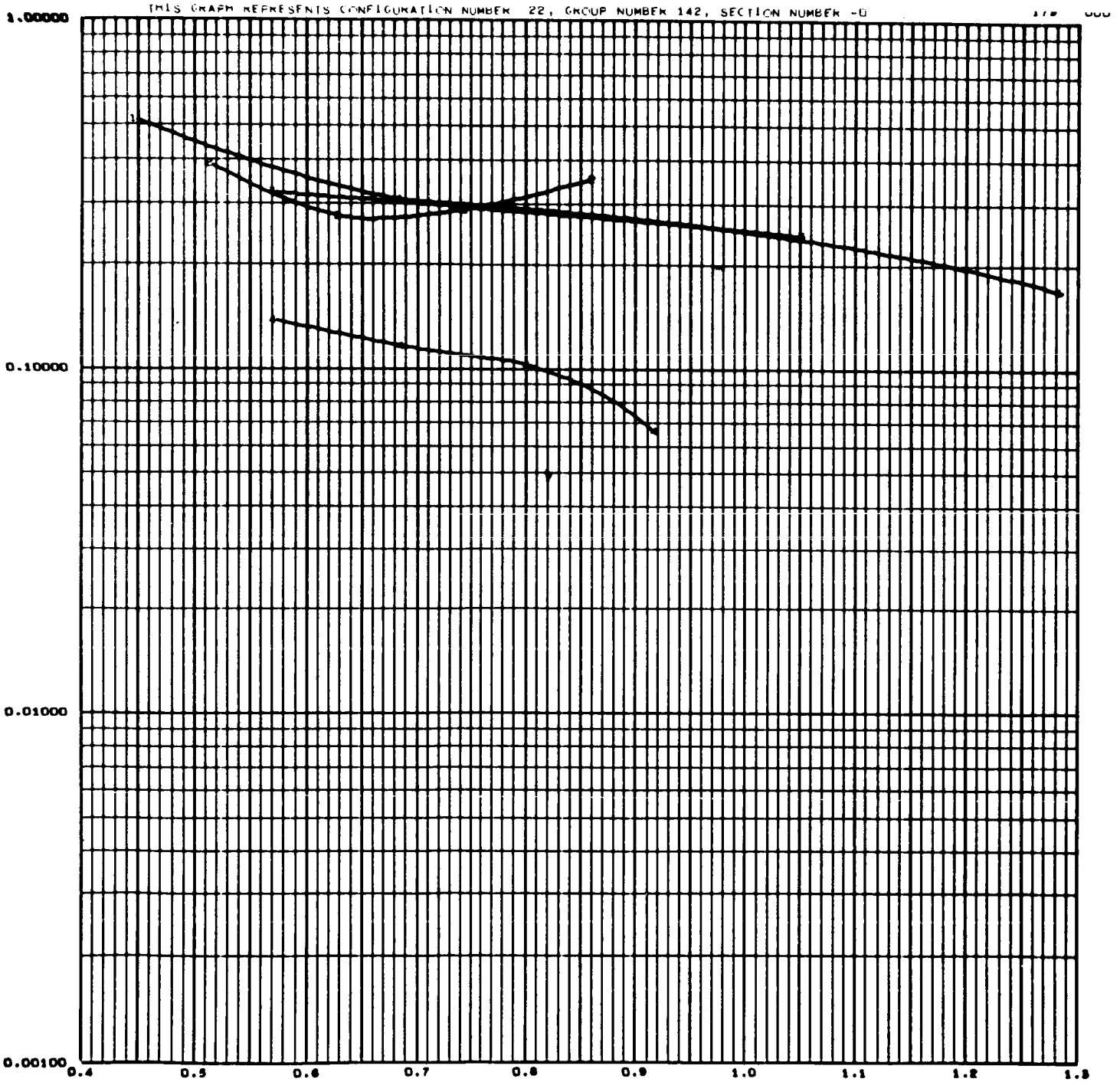
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.09
GROUP NO. 142
TOTAL PRESSURE 460.9 PSIA
REYNOLDS NUMBER PER INCH 0.0556 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1716.40 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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CONFIDENTIAL

HEAT TRANSFER TEST

APOLLO

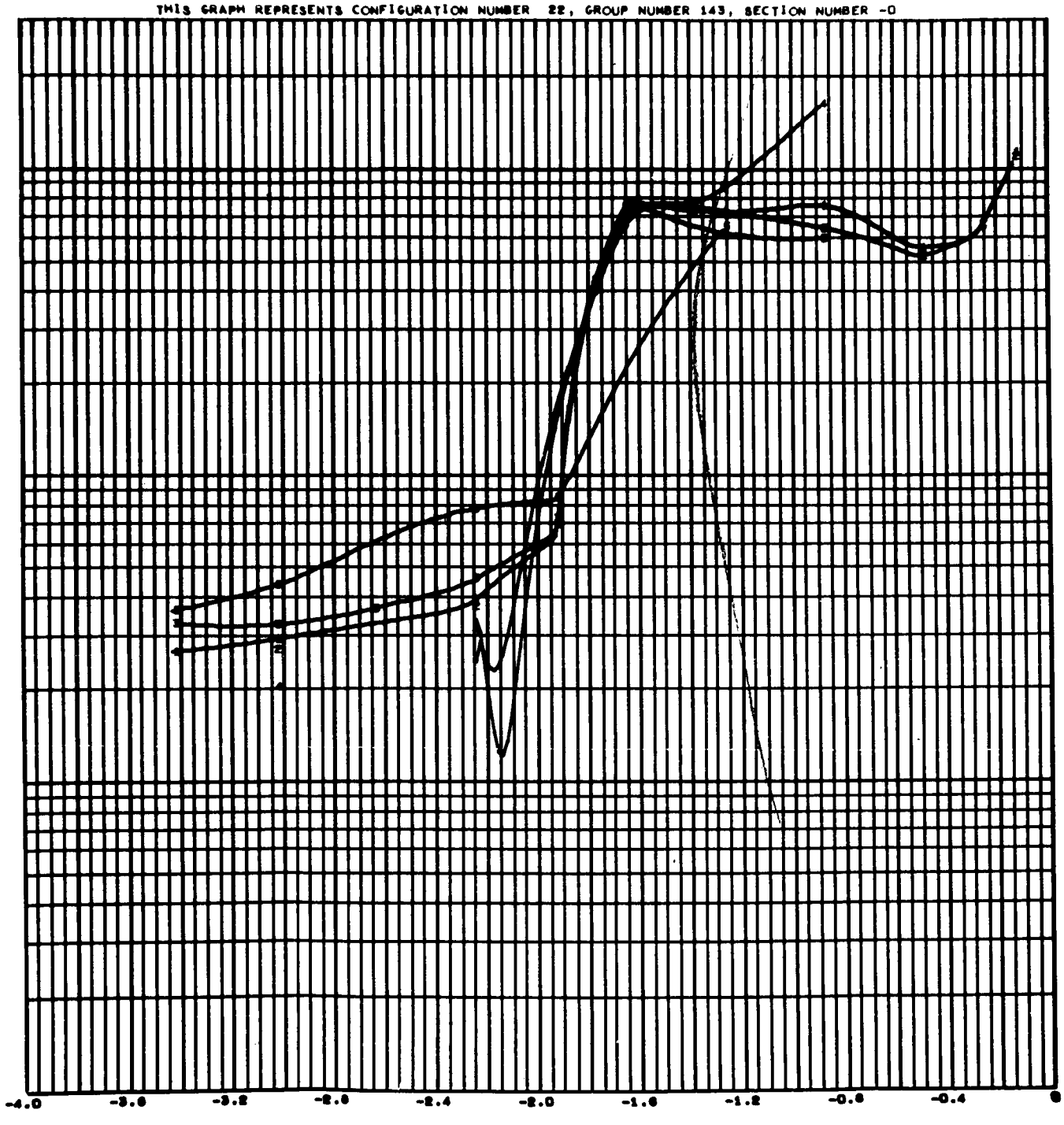
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.15
GROUP NO. 143
TOTAL PRESSURE 750.0 PSIA
REYNOLDS NUMBER PER INCH 0.0823 X 10^6
M_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1804.80 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 143, SECTION NUMBER -0

4039-11 L
543 000



CONFIDENTIAL

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HEAT TRANSFER TEST

APOLLO

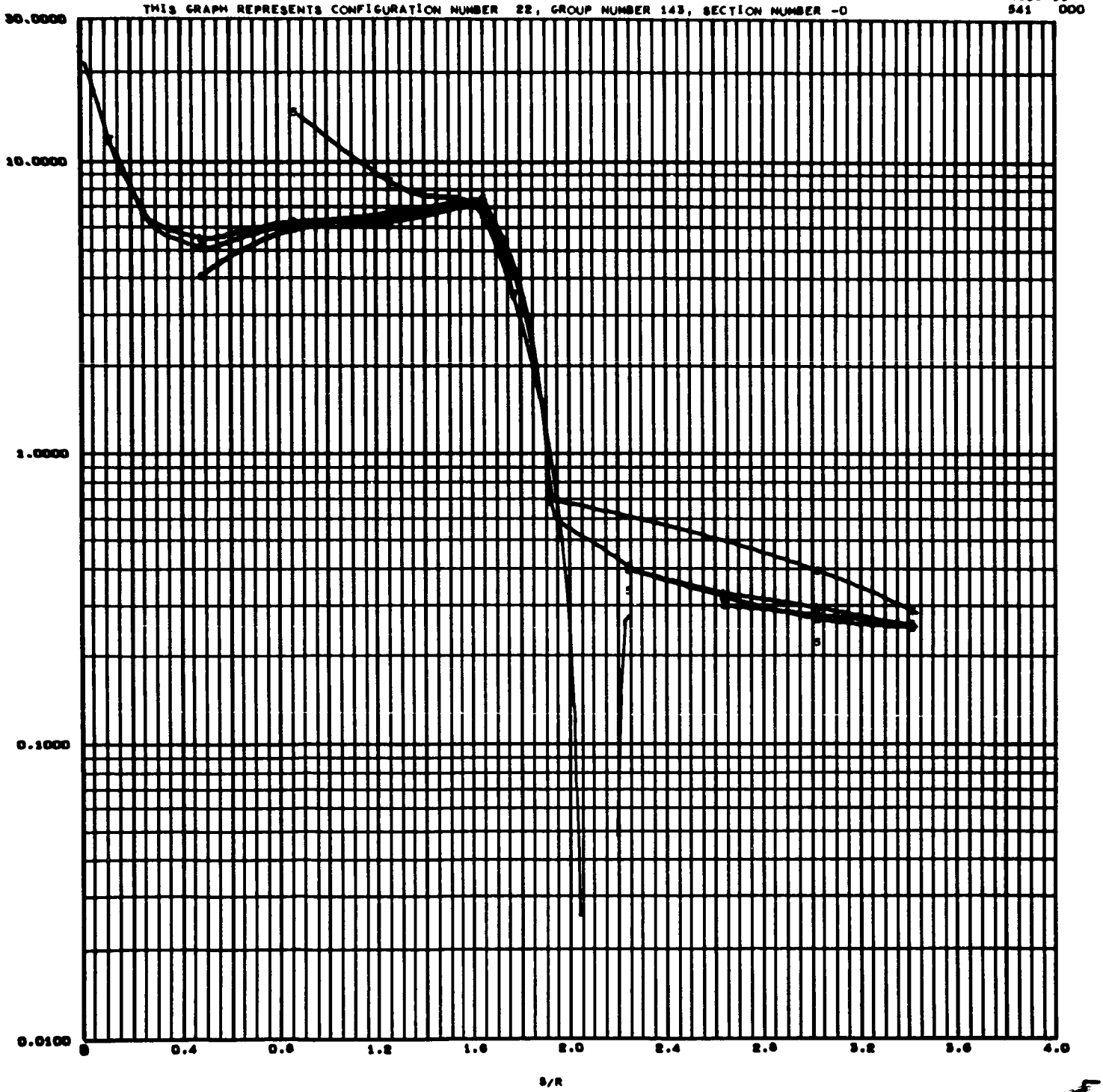
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 143
TOTAL PRESSURE 750.0 PSIA
REYNOLDS NUMBER PER INCH 0.0823 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1804.80 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
541 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 143, SECTION NUMBER -0



CONFIDENTIAL

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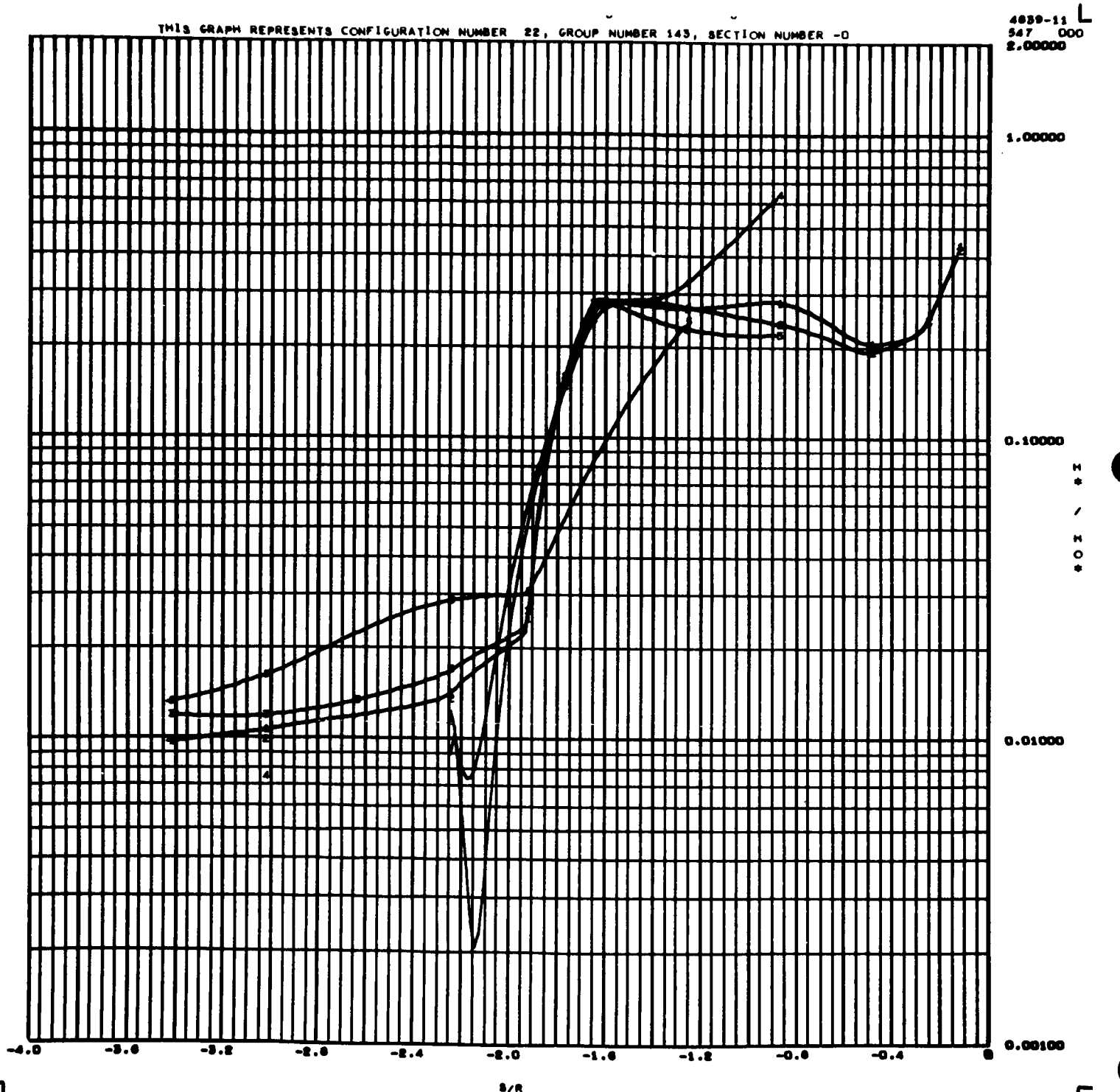
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 143
TOTAL PRESSURE 750.0 PSIA
REYNOLDS NUMBER PER INCH 0.0823 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1804.80 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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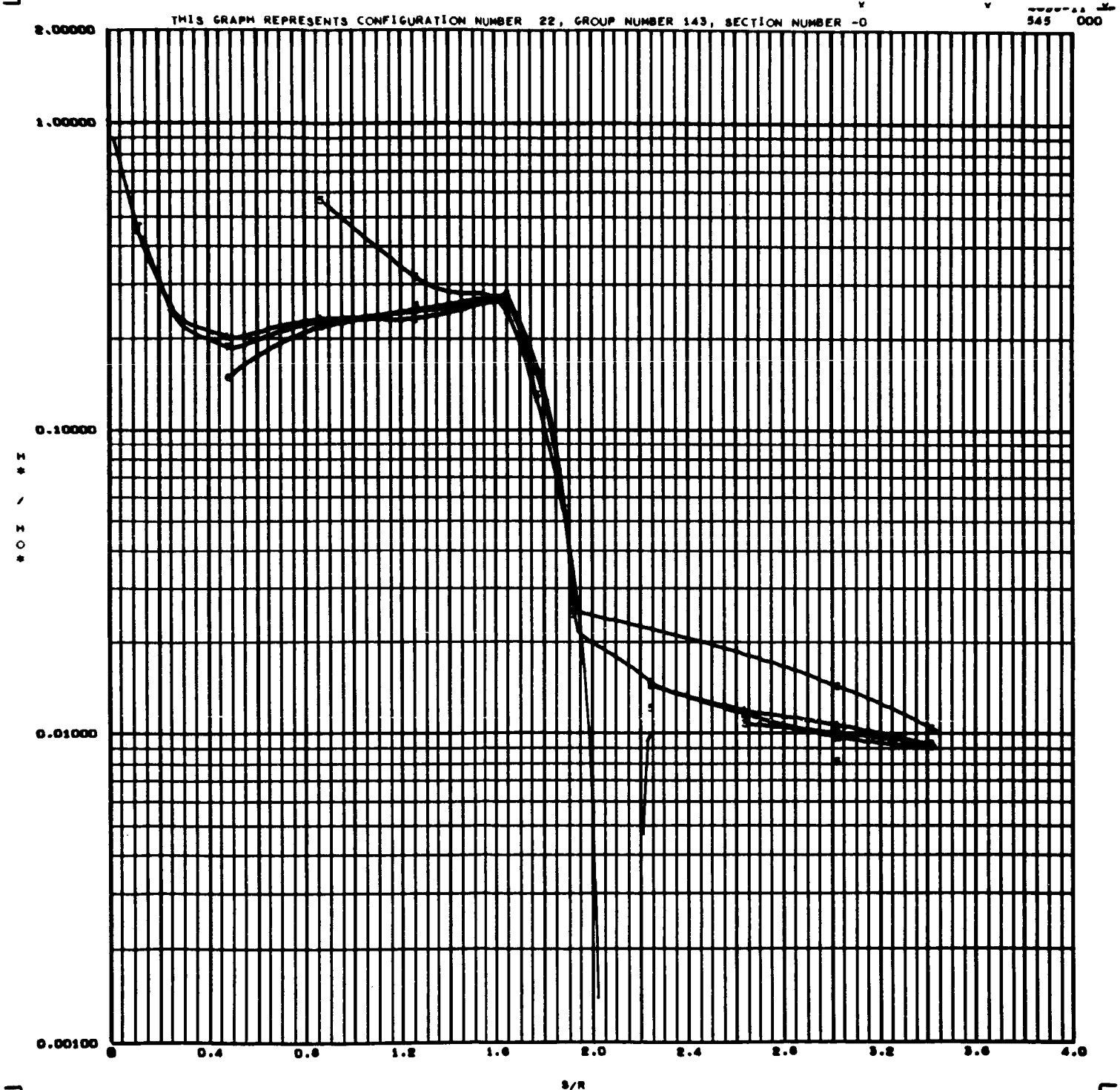
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 143
TOTAL PRESSURE 750.0 PSIA
REYNOLDS NUMBER PER INCH 0.0823 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1804.80 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



CONFIDENTIAL

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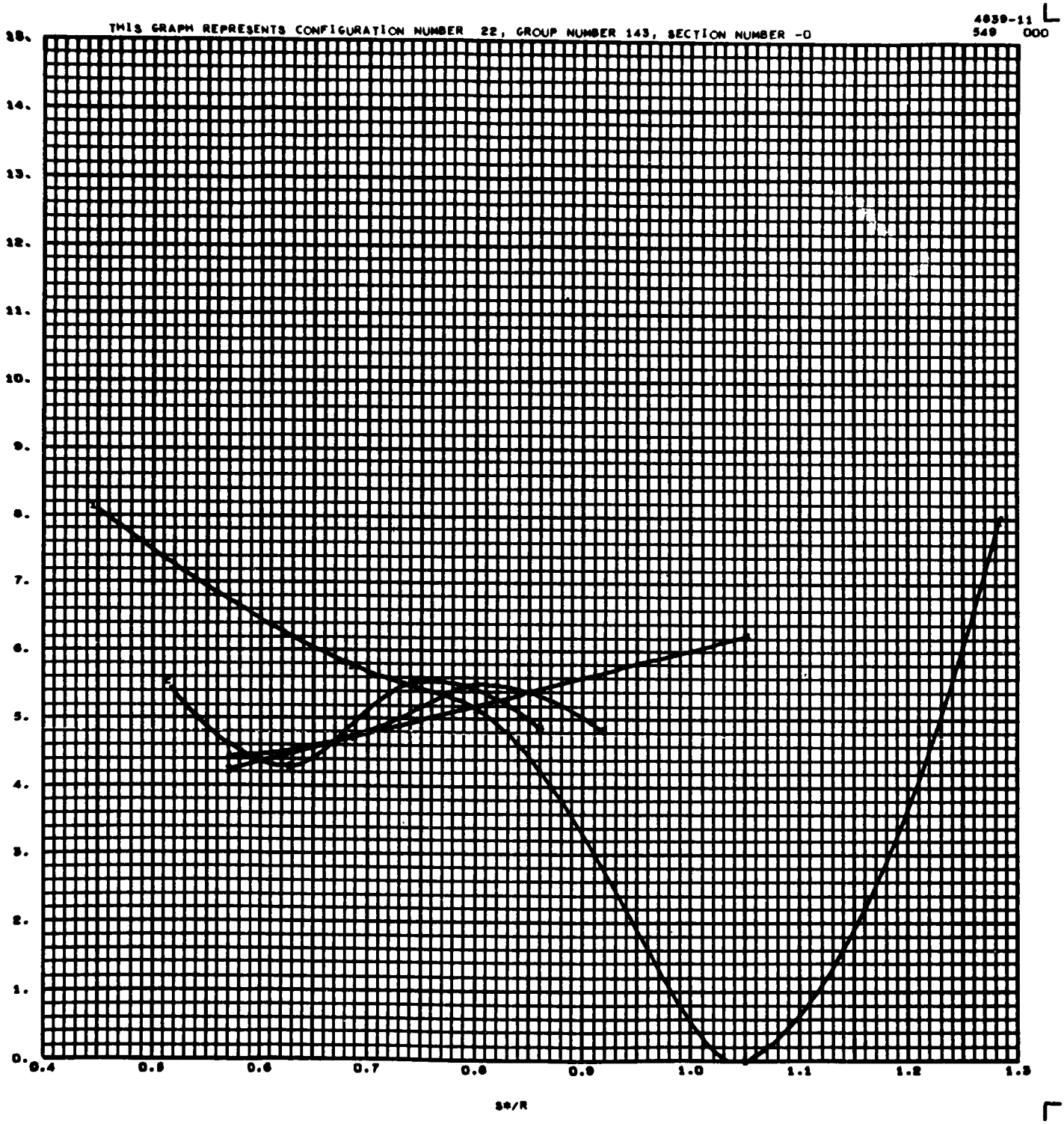
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 143
TOTAL PRESSURE 750.0 PSIA
REYNOLDS NUMBER PER INCH 0.0823 X 10^6
H_o * 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1804.80 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	



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[redacted]

HEAT TRANSFER TEST

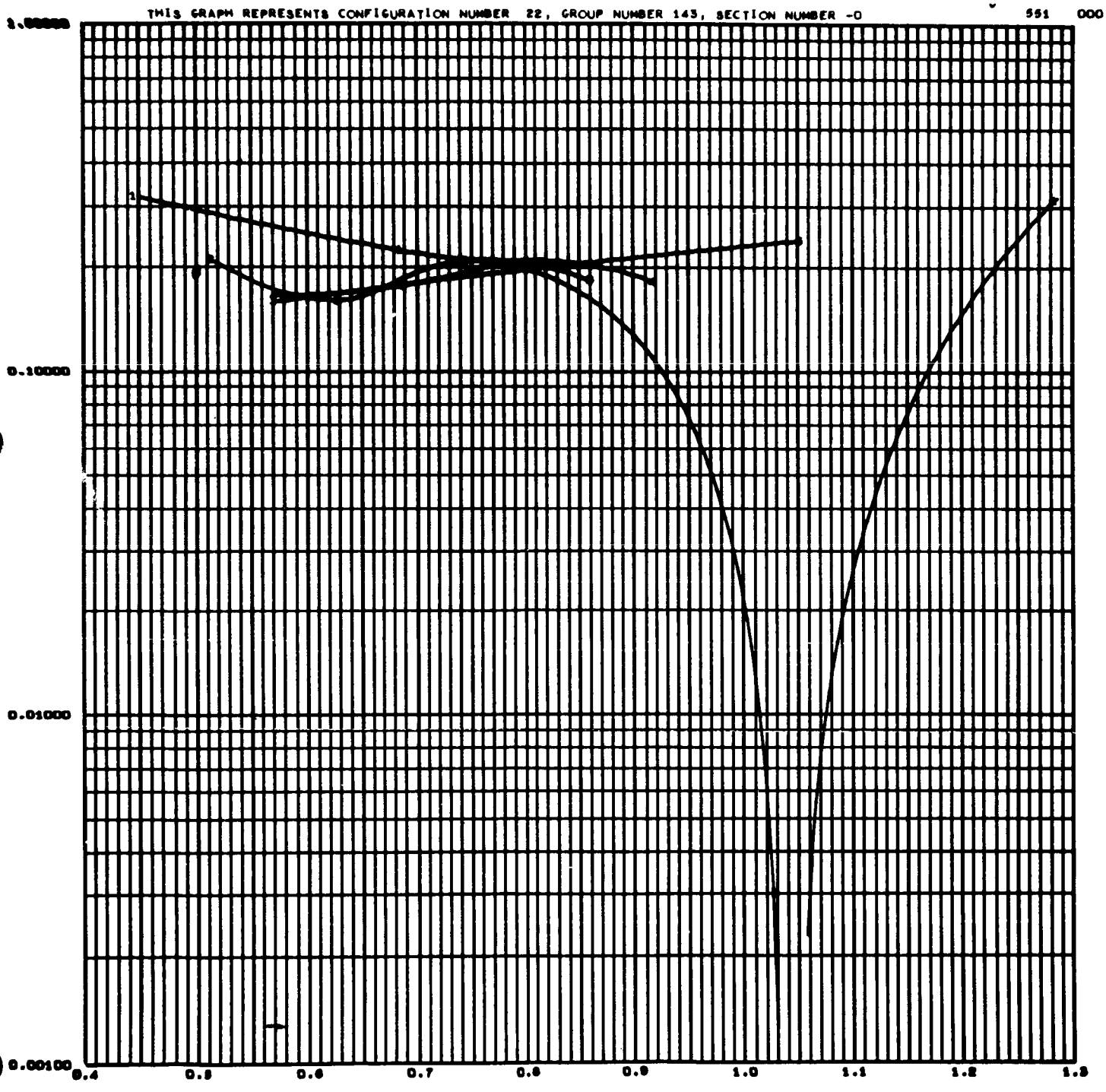
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 143
TOTAL PRESSURE 750.0 PSIA
REYNOLDS NUMBER PER INCH 0.0823 X 10^6
M_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1804.80 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 143, SECTION NUMBER -0 551 000



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HEAT TRANSFER TEST

APOLLO

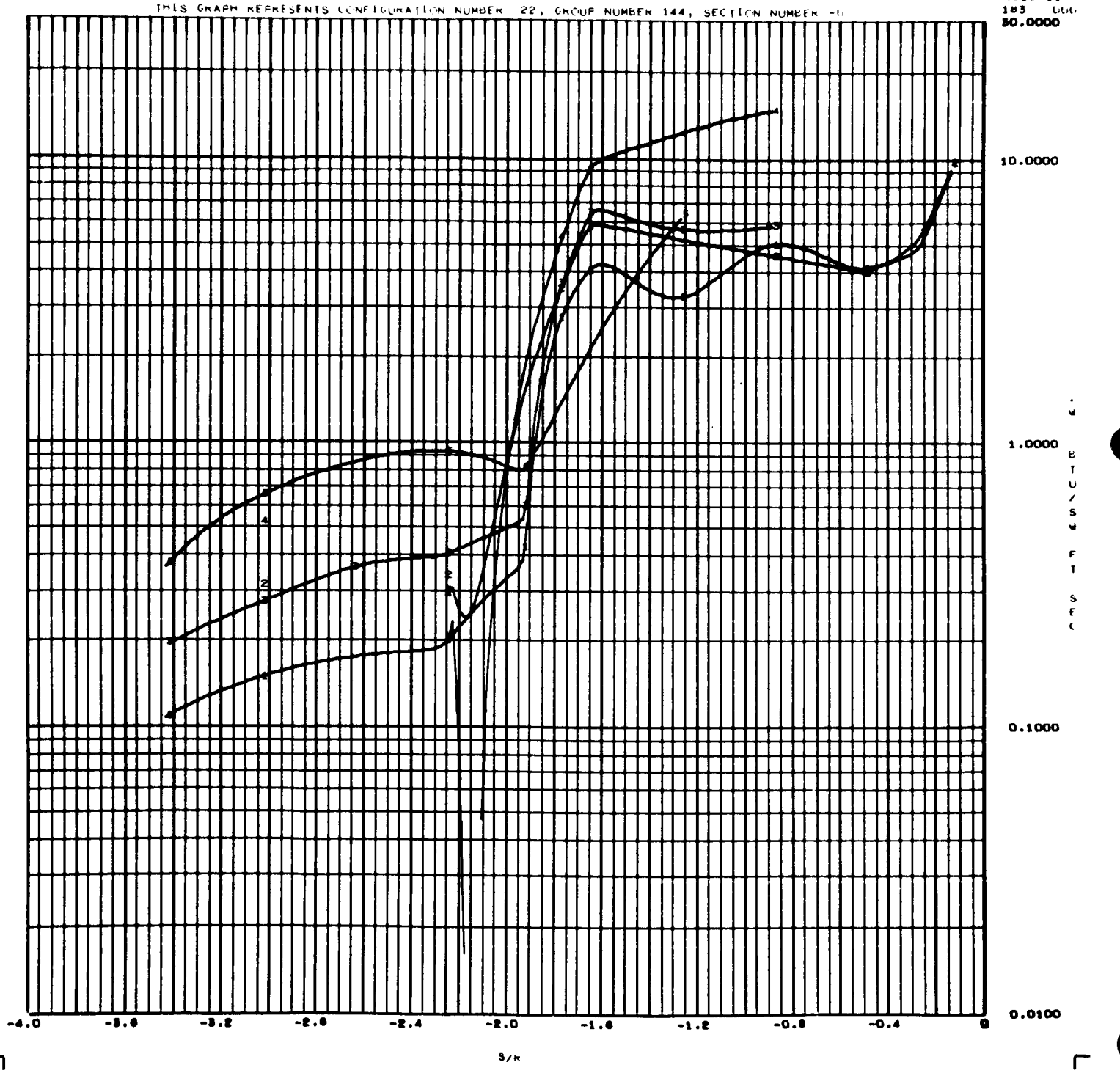
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 144
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_c^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1790.50 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 144, SECTION NUMBER -0

4839-11
183 000



[redacted]

[redacted]

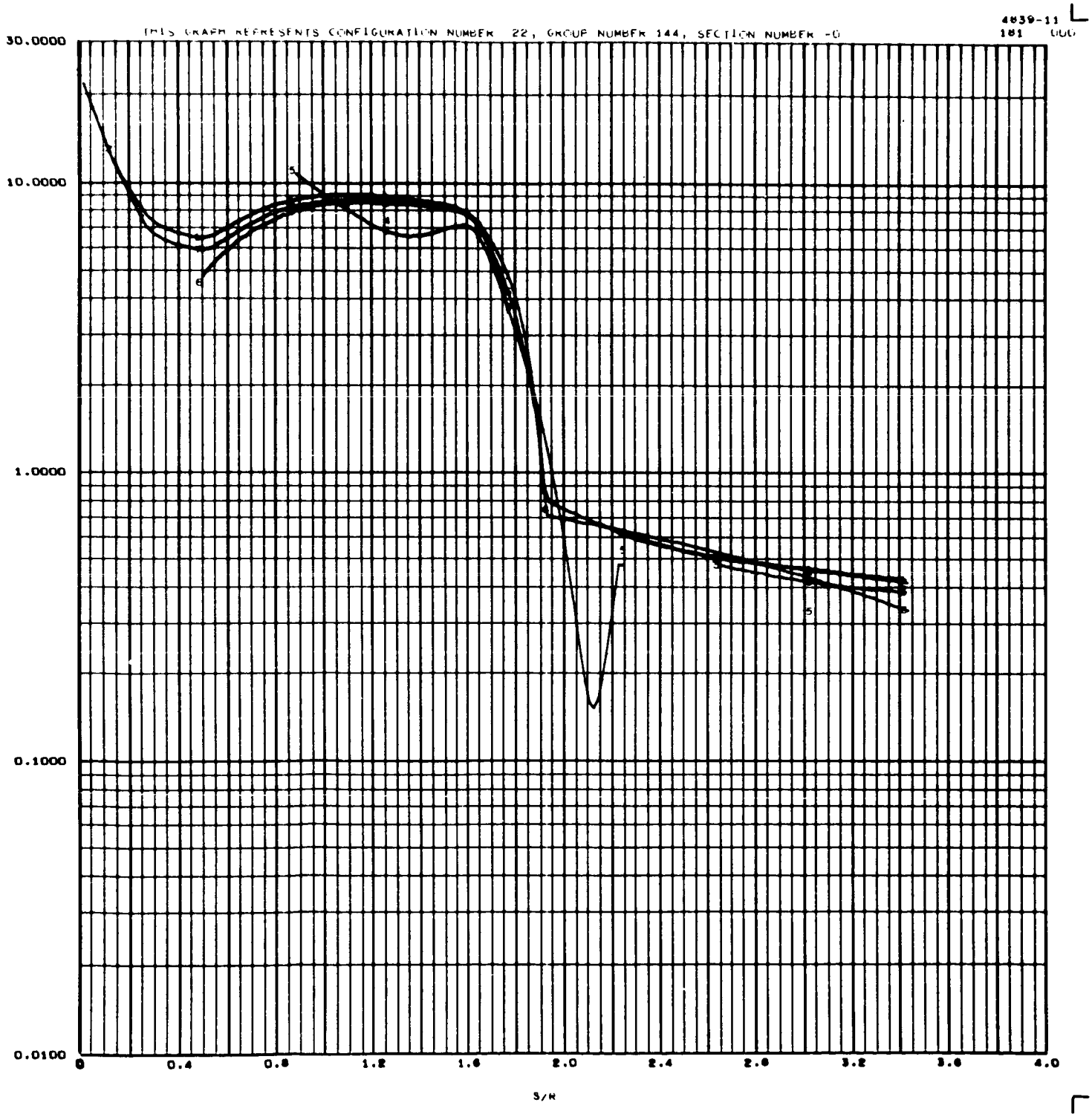
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 144
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 x 10^6
μ_0^* 0.08133 LB/FT x SEC
TOTAL TEMPERATURE 1790.50 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

CONFIDENTIAL

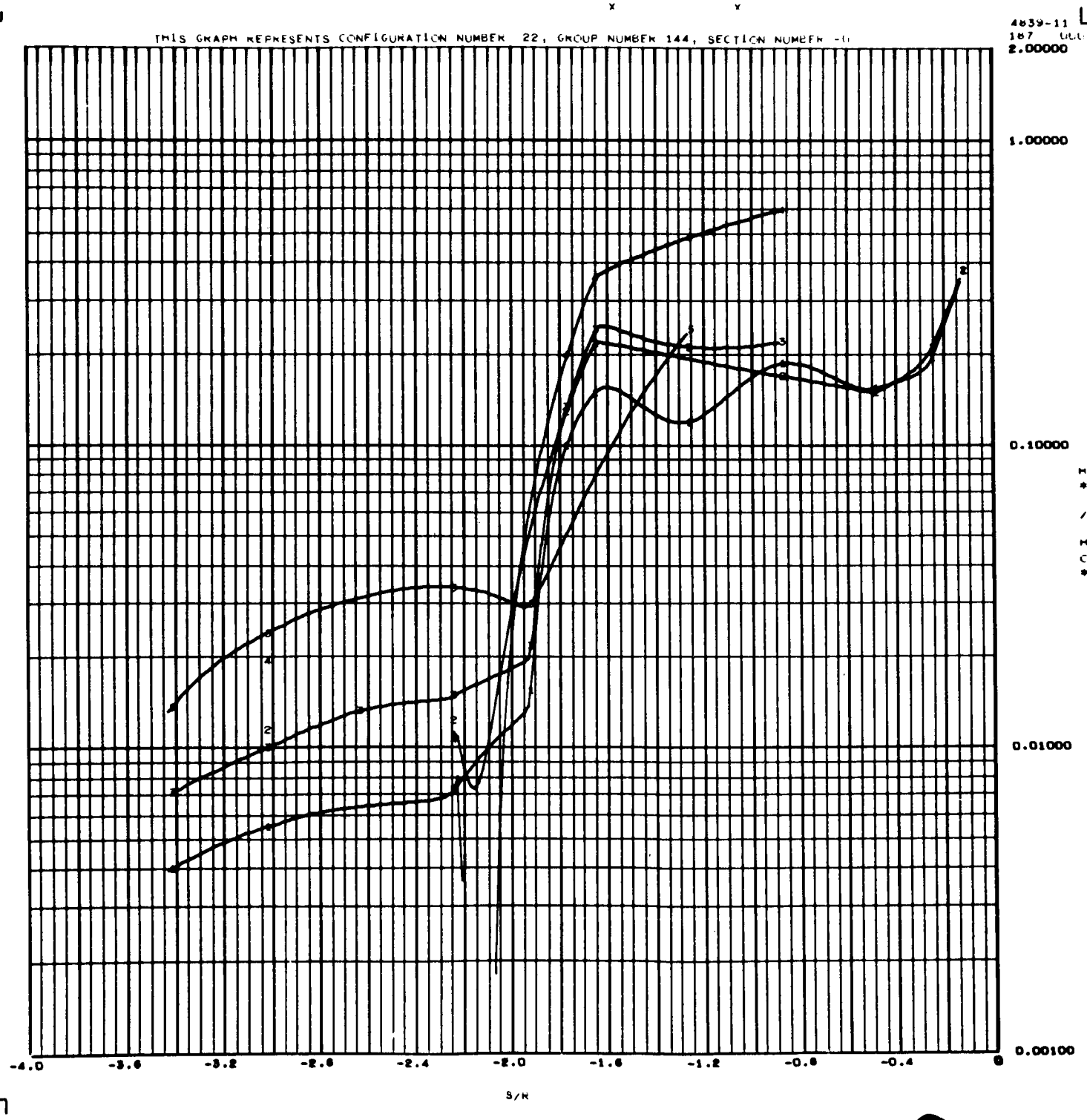
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 144
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1790.50 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

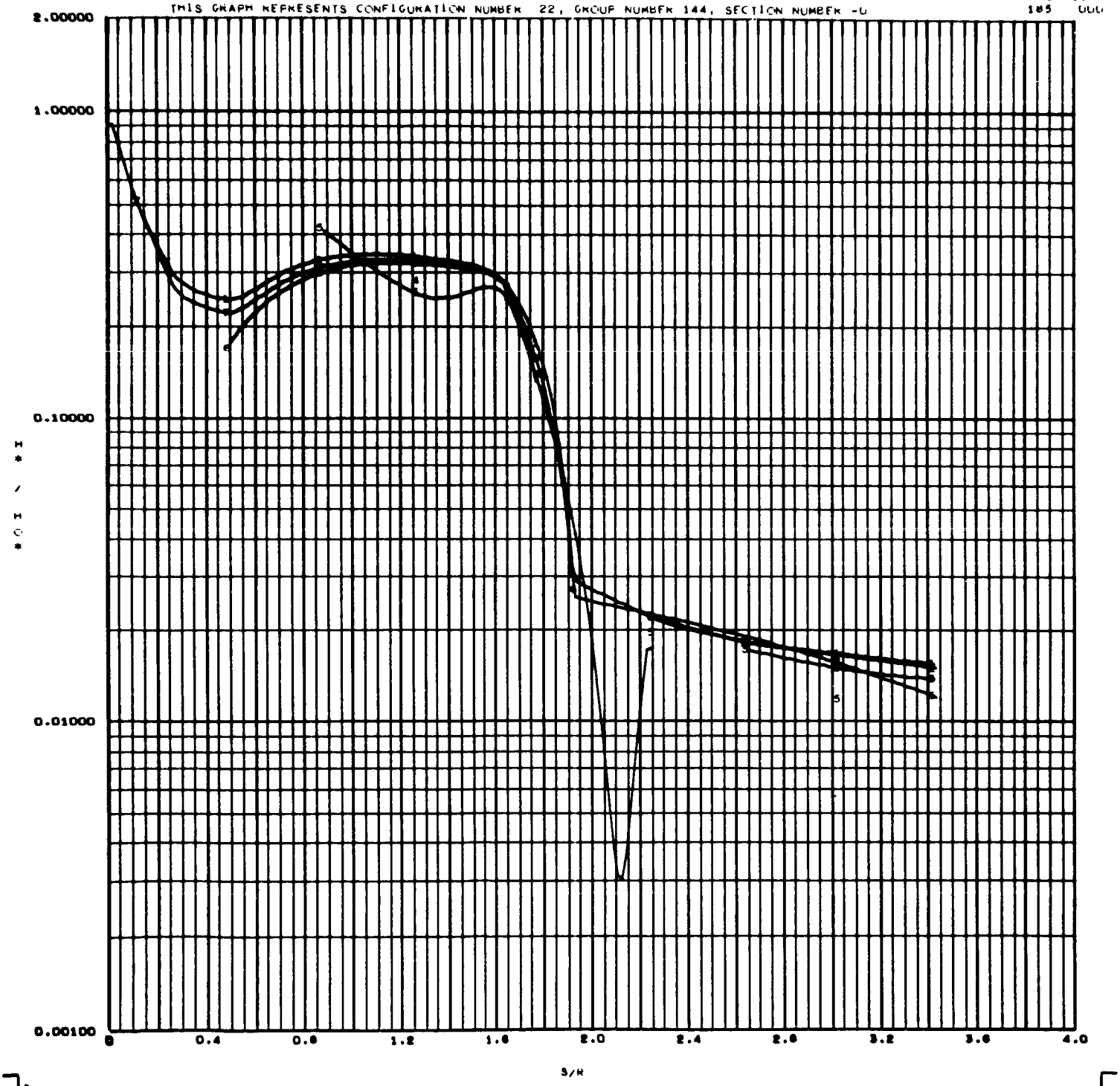
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 144
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 x 10^6
H_o^* 0.08133 LB/FT x SEC
TOTAL TEMPERATURE 1790.50 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 144, SECTION NUMBER -0

4839-11
185 000



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[redacted]

HEAT TRANSFER TEST

APOLLO

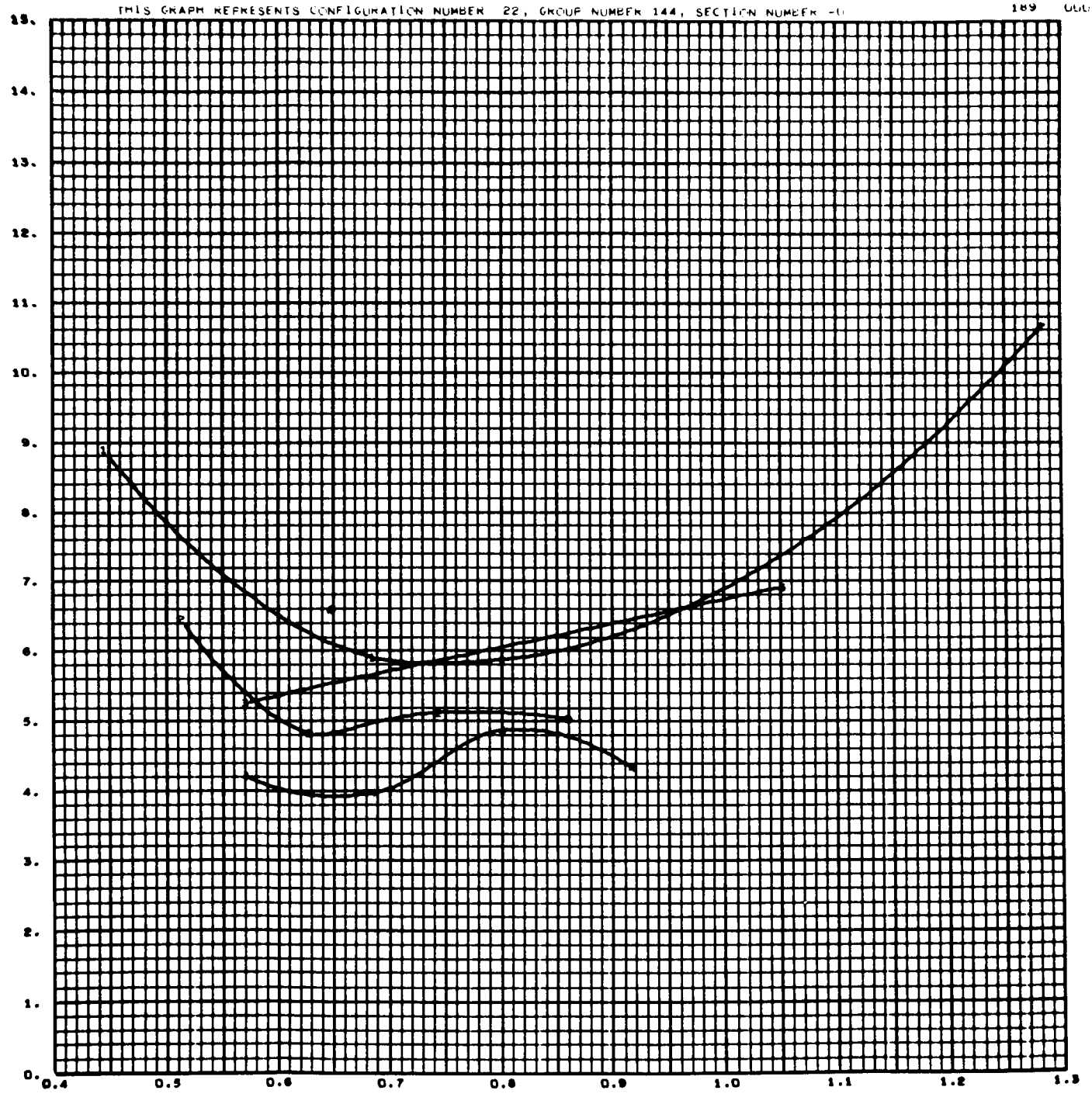
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 144
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1790.50 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	"
3.0	3	"
4.0	4	LEEWARD STRAKE DATA

4839-11
189 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 144, SECTION NUMBER -0



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HEAT TRANSFER TEST

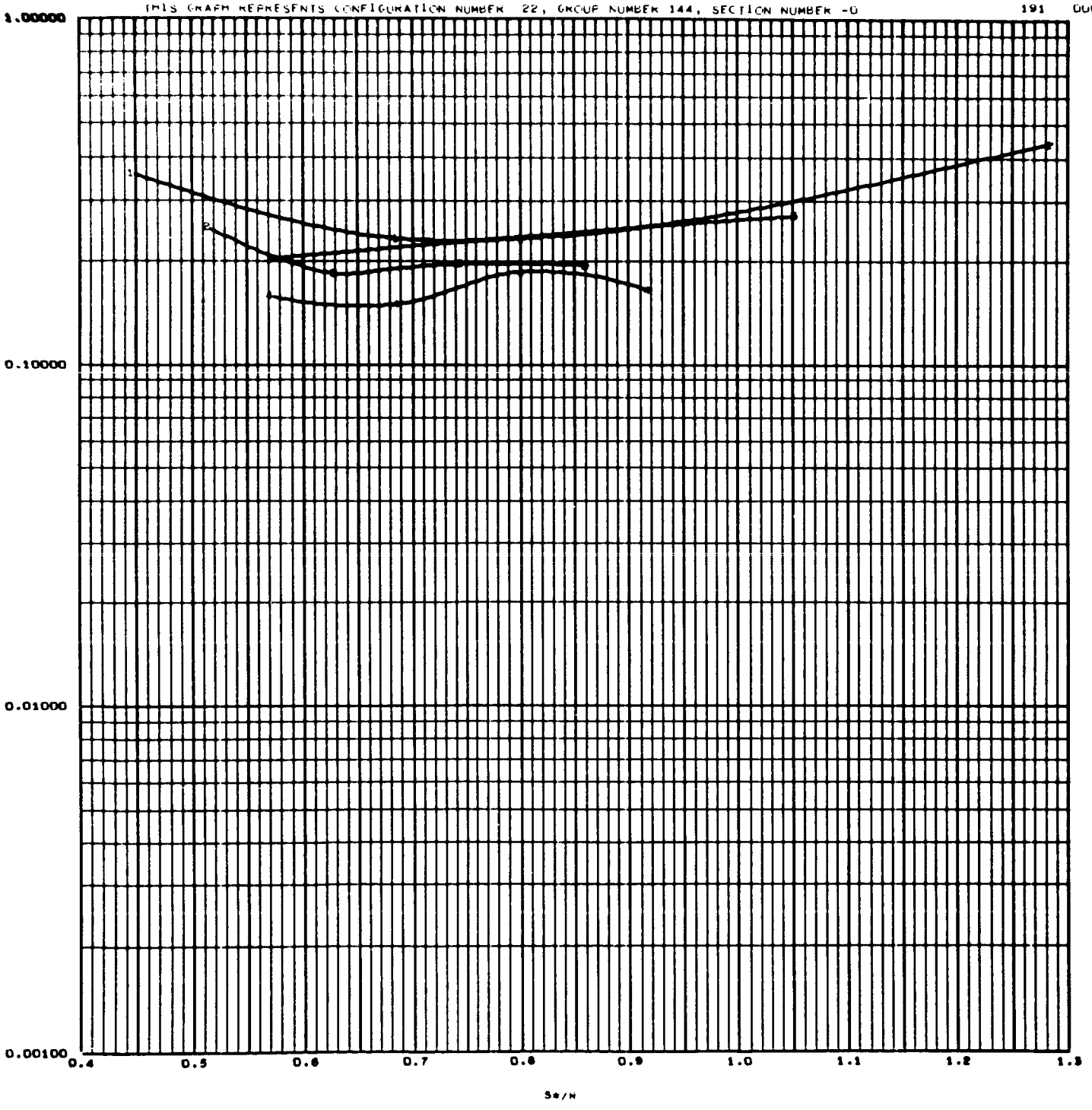
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 144
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1790.50 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

4839-11
191 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 144, SECTION NUMBER -0



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[redacted]

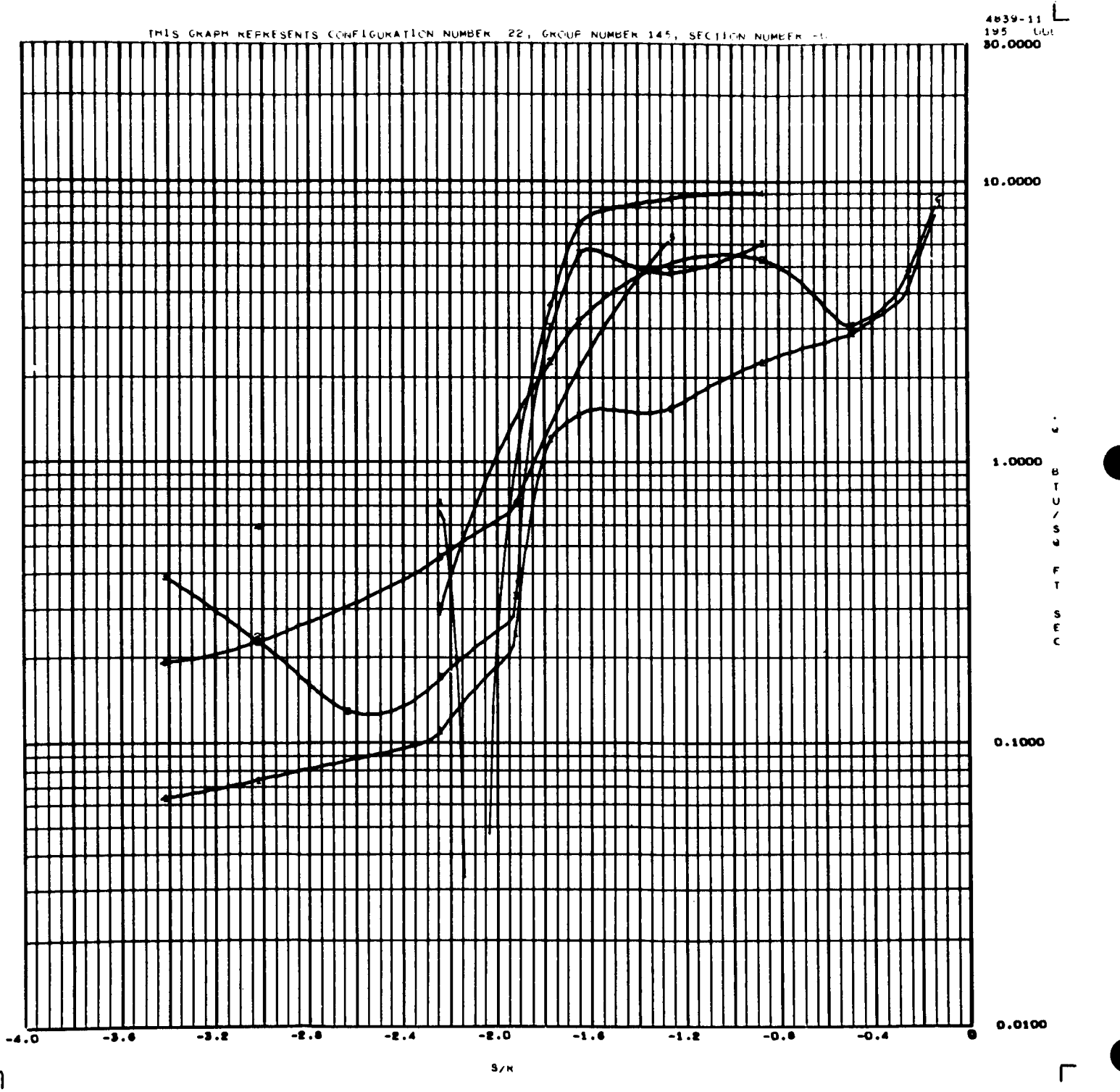
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 145
TOTAL PRESSURE 757.4 PSIA
REYNOLDS NUMBER PER INCH 0.0840 x 10^6
μ_0^* 0.00133 LB/FT X SEC
TOTAL TEMPERATURE 1794.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

[redacted]

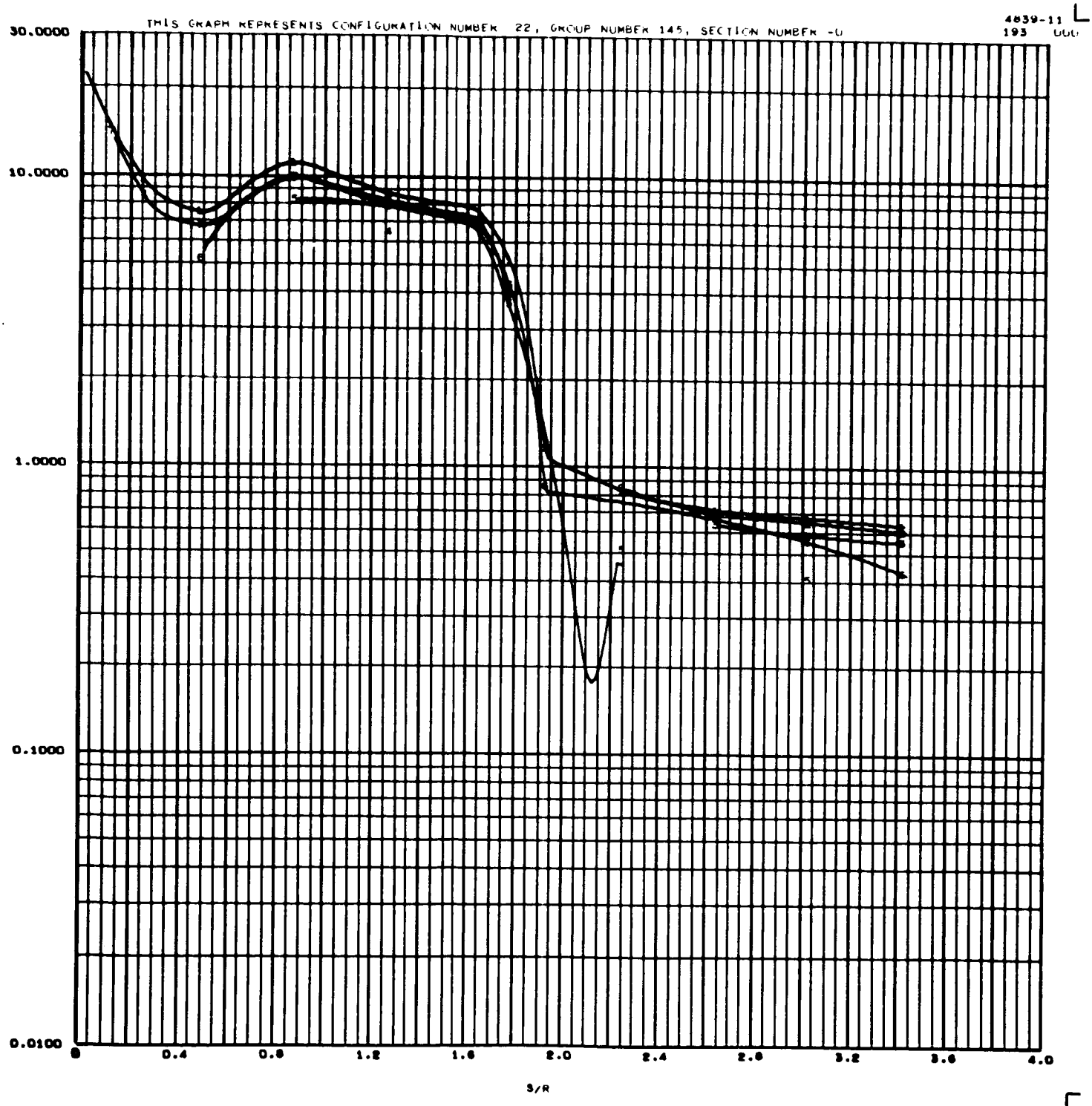
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 145
TOTAL PRESSURE 757.4 PSIA
REYNOLDS NUMBER PER INCH 0.0840 x 10^6
μ_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1794.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

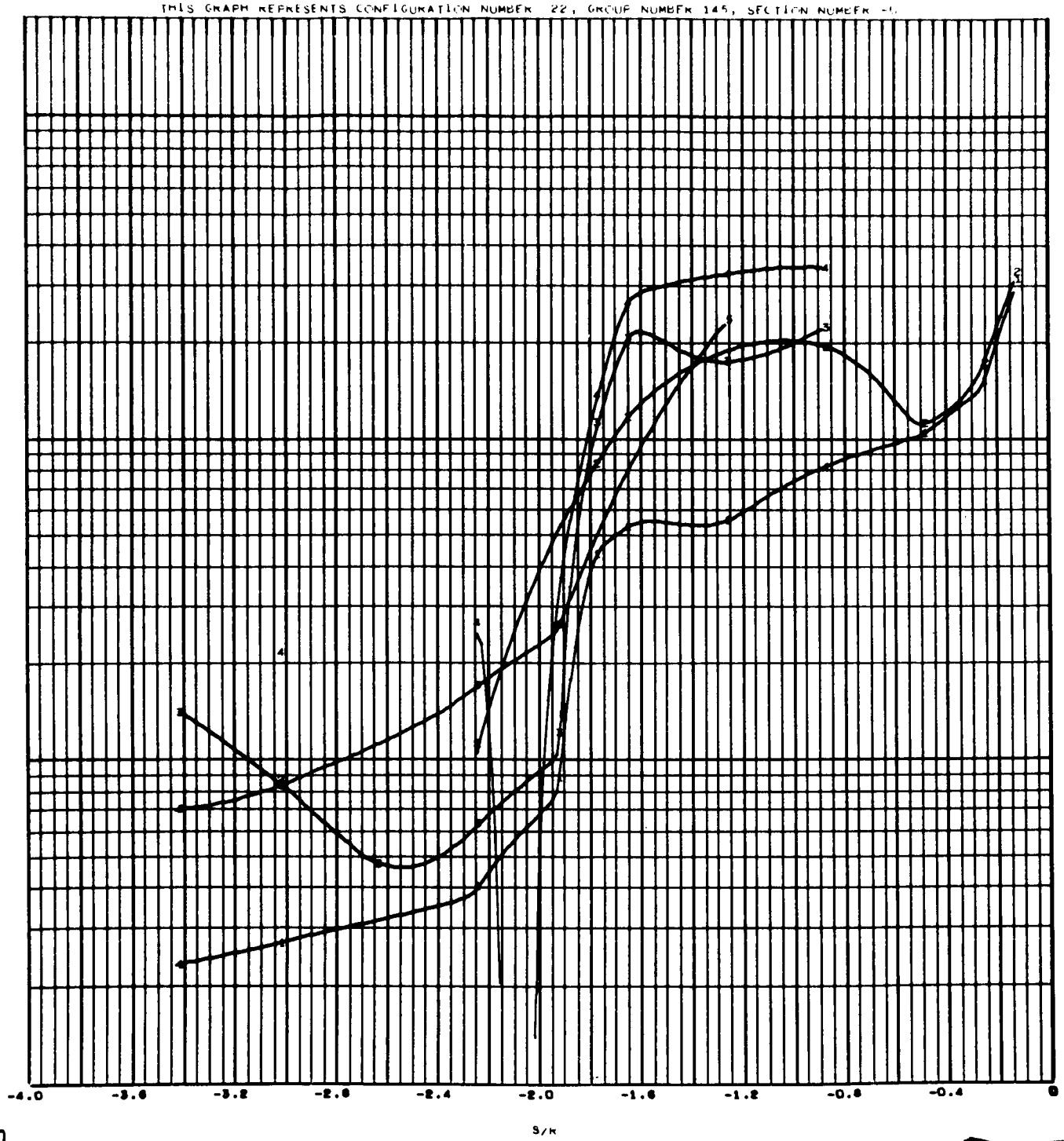
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 145
TOTAL PRESSURE 757.4 PSIA
REYNOLDS NUMBER PER INCH 0.0840 x 10^6
m_o^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1794.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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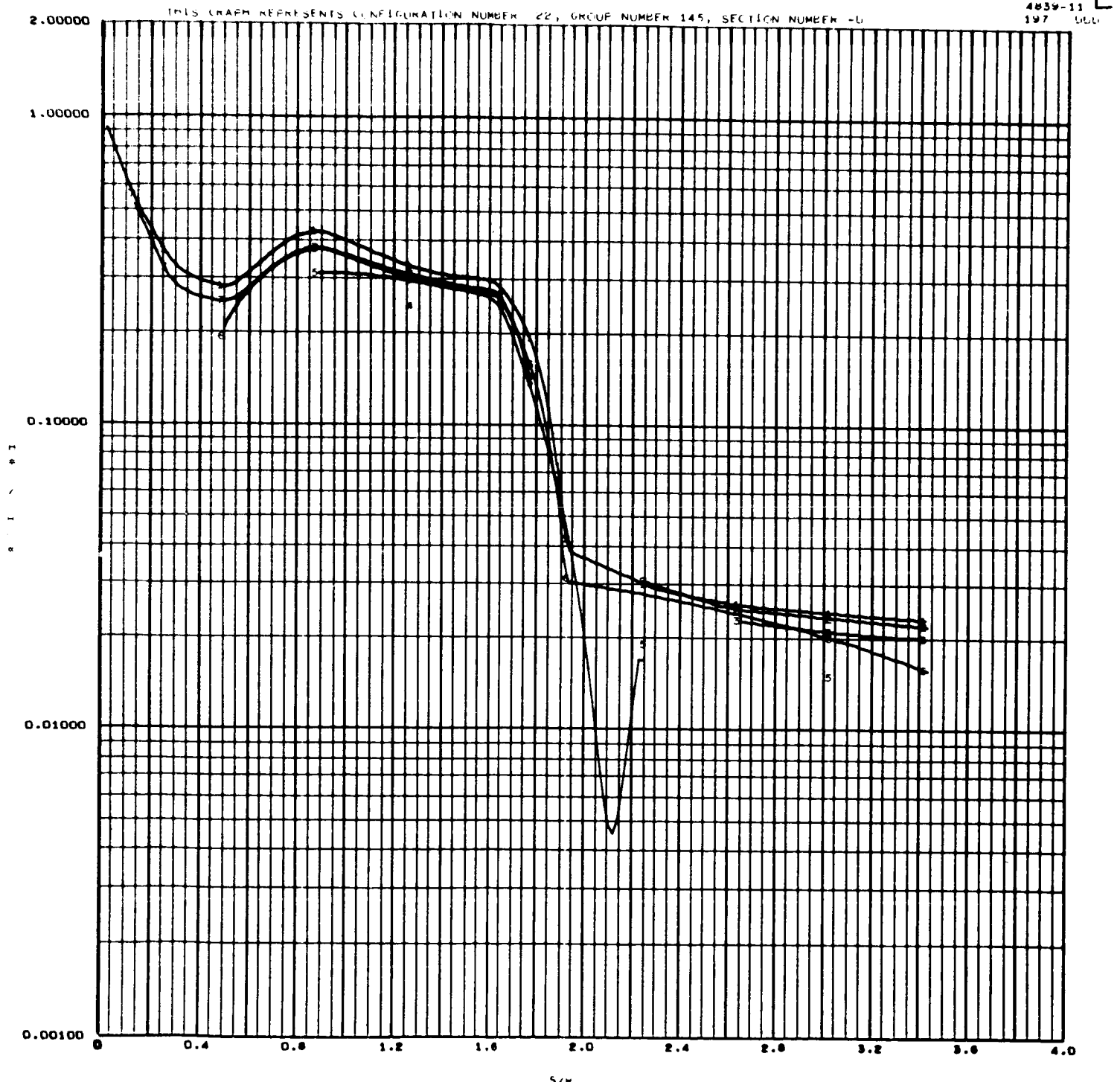
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 145
TOTAL PRESSURE 757.4 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
μ_0 * 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1794.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

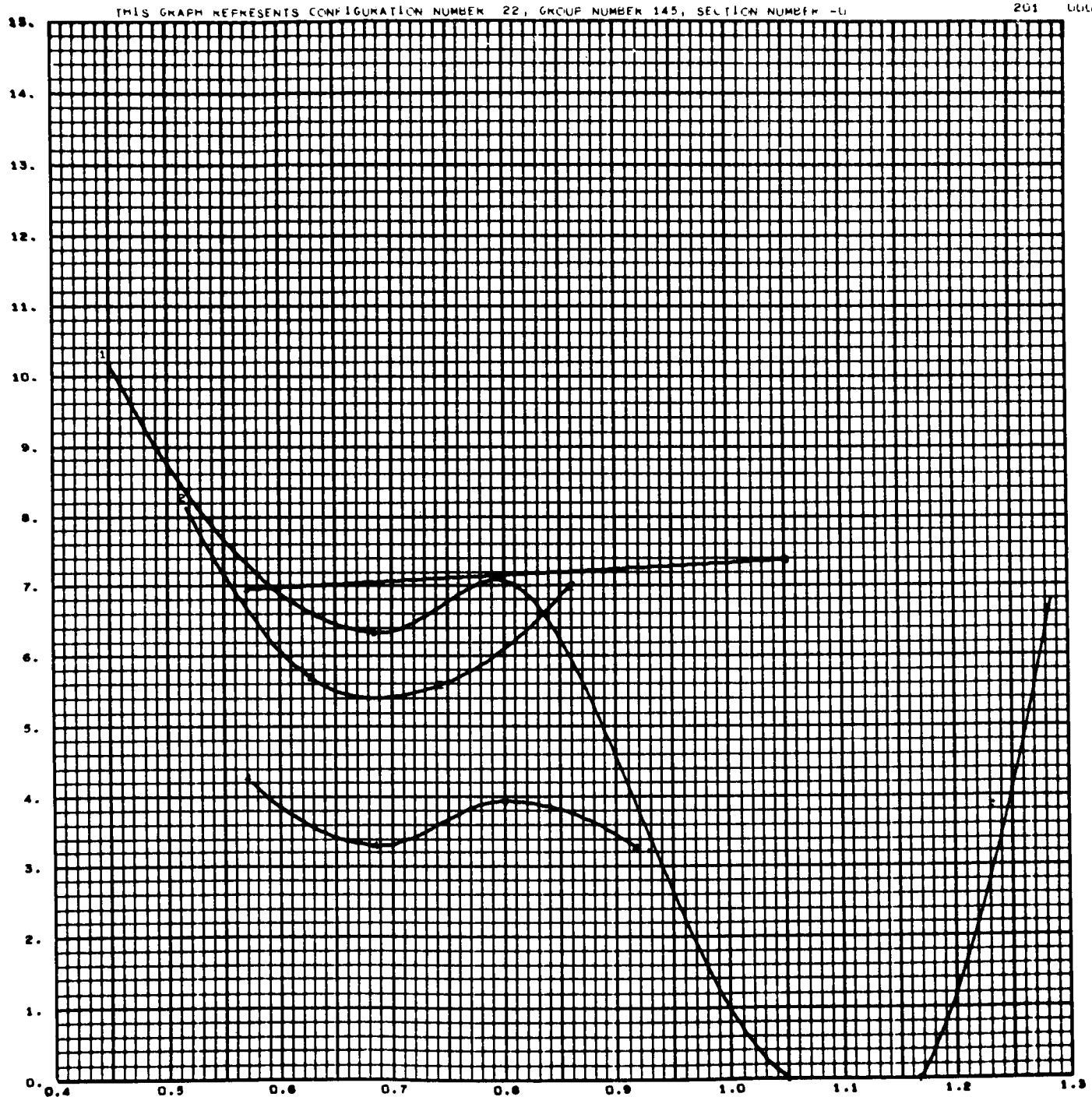
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 145
TOTAL PRESSURE 757.4 PSIA
REYNOLDS NUMBER PER INCH 0.0840 X 10^6
H_o * 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1794.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
201 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 145, SECTION NUMBER -0



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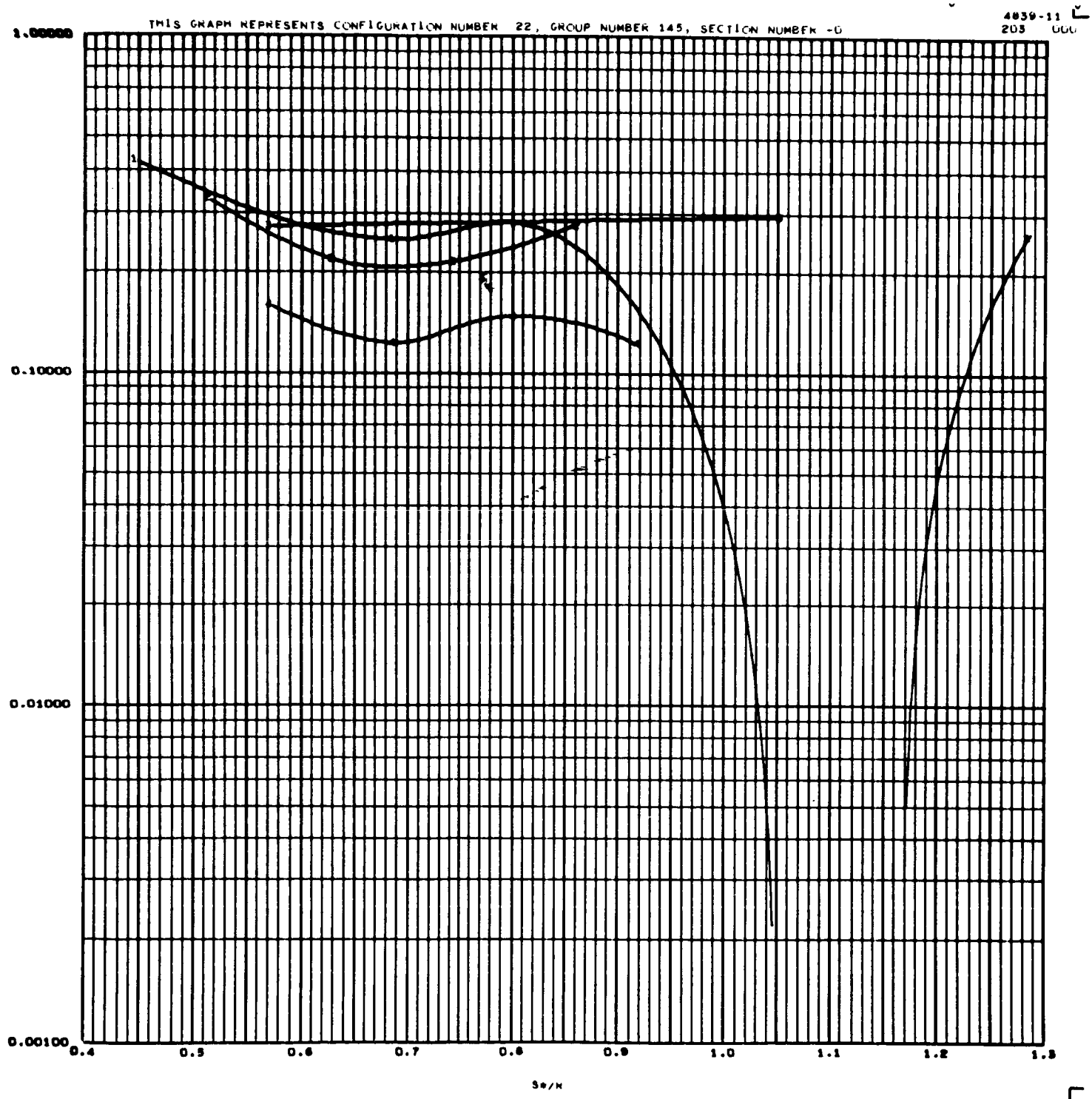
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 145
TOTAL PRESSURE 757.4 PSIA
REYNOLDS NUMBER PER INCH 0.0840 x 10^6
H_0* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1794.50 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4



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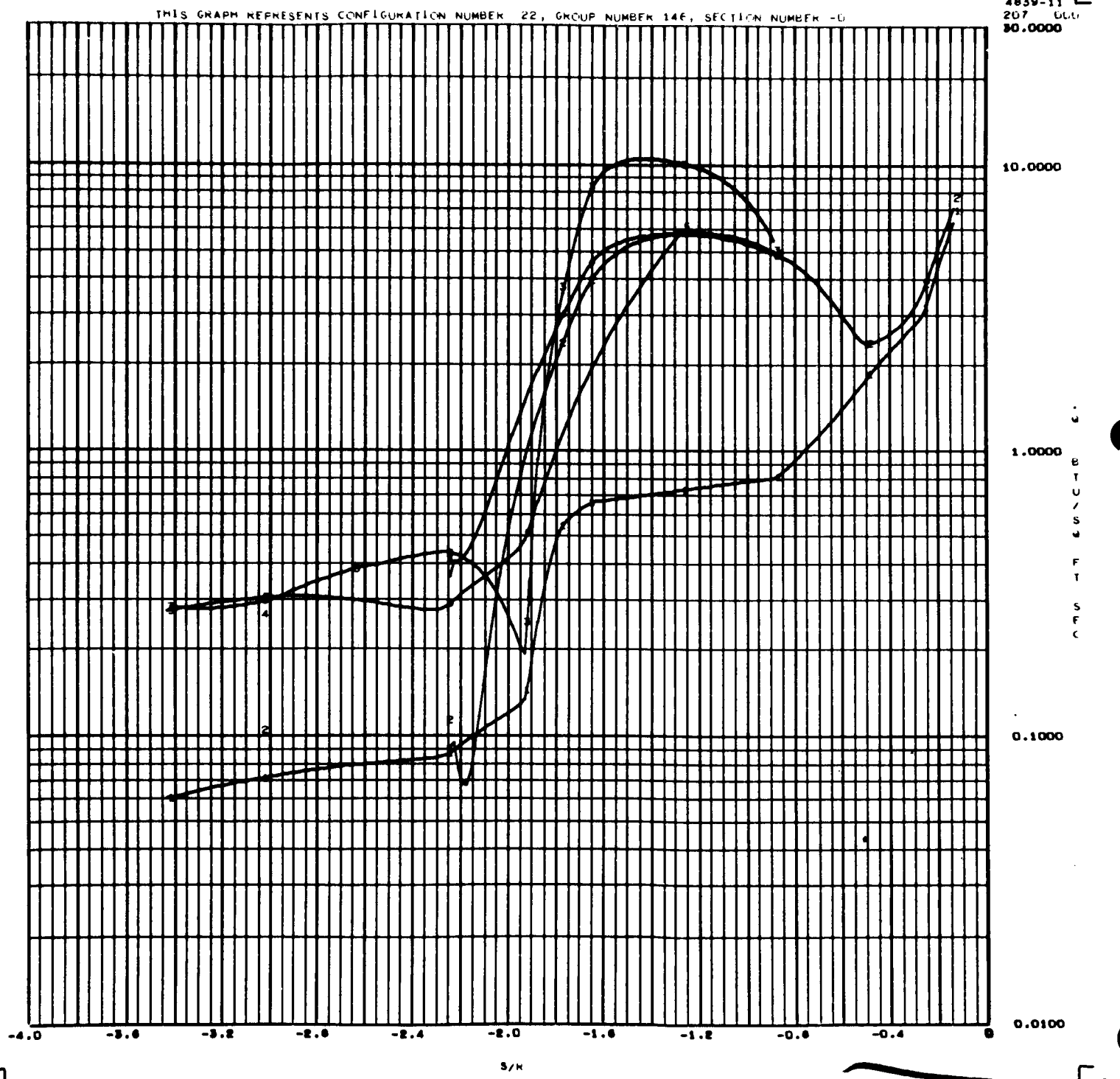
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 146
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_c^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1793.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

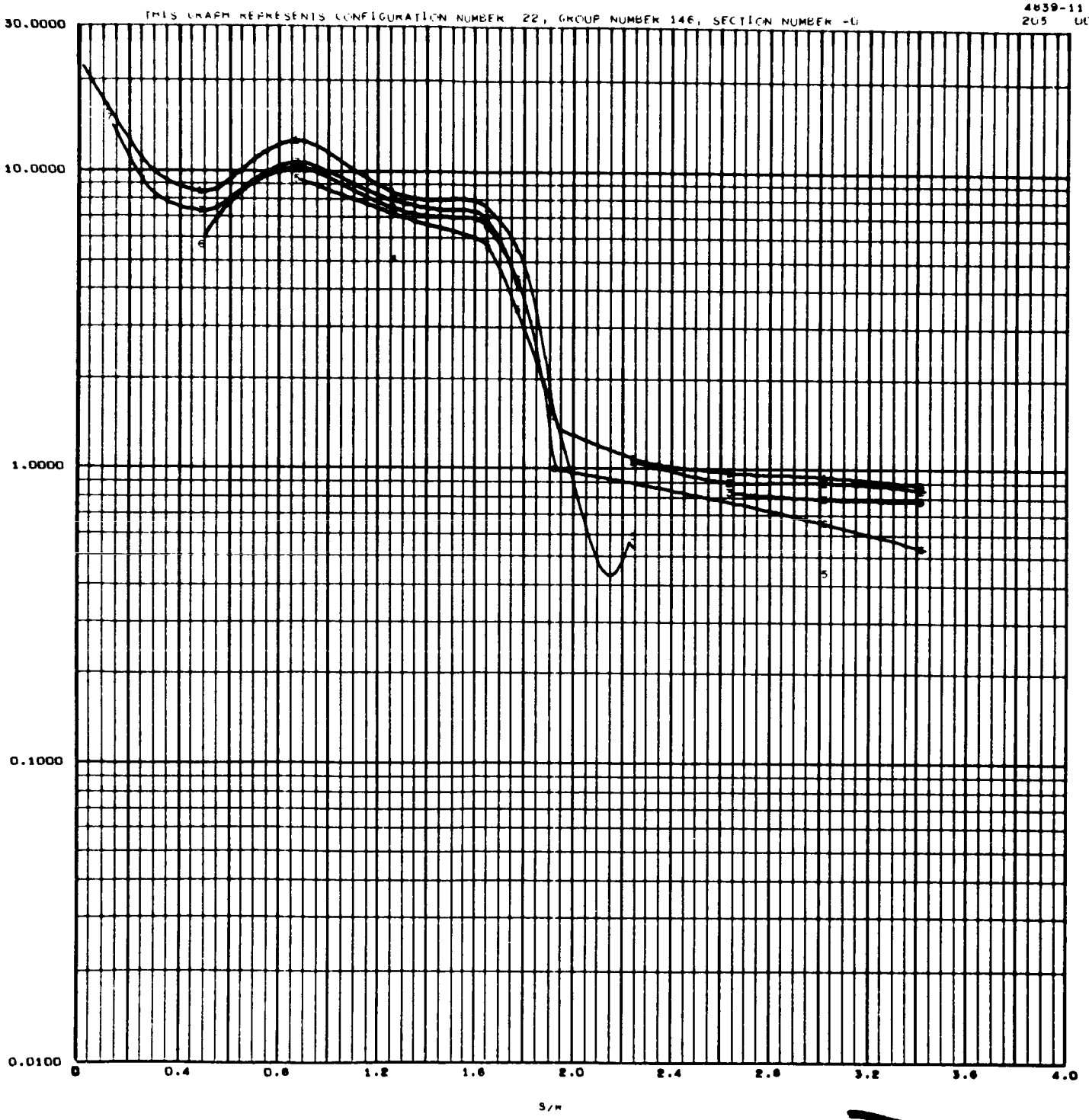
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 146
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0841 x 10^6
μ_0^* 0.08133 LB/FT^2 x SEC
TOTAL TEMPERATURE 1793.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
205 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 146, SECTION NUMBER -0



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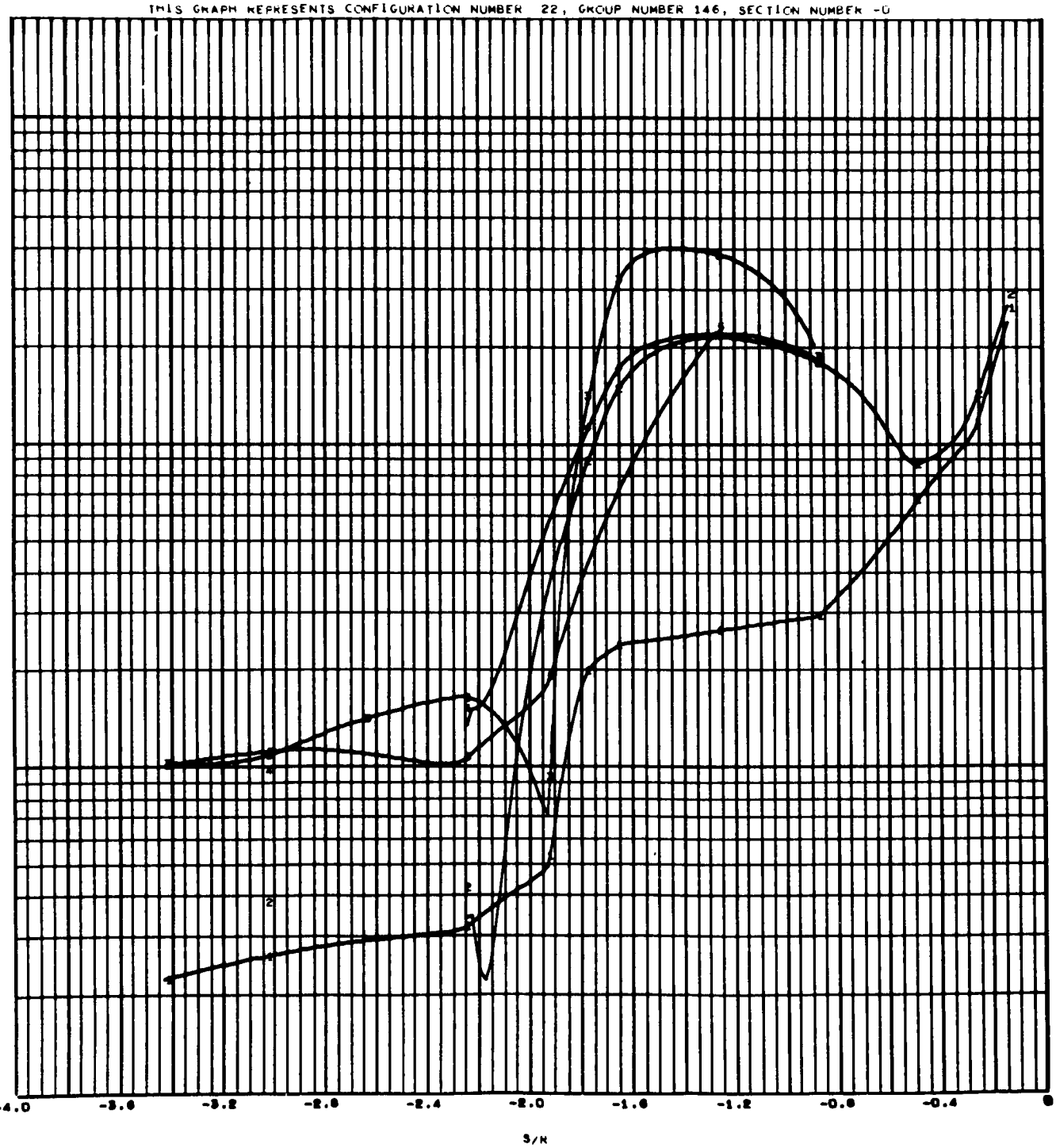
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 146
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
M_o * 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1793.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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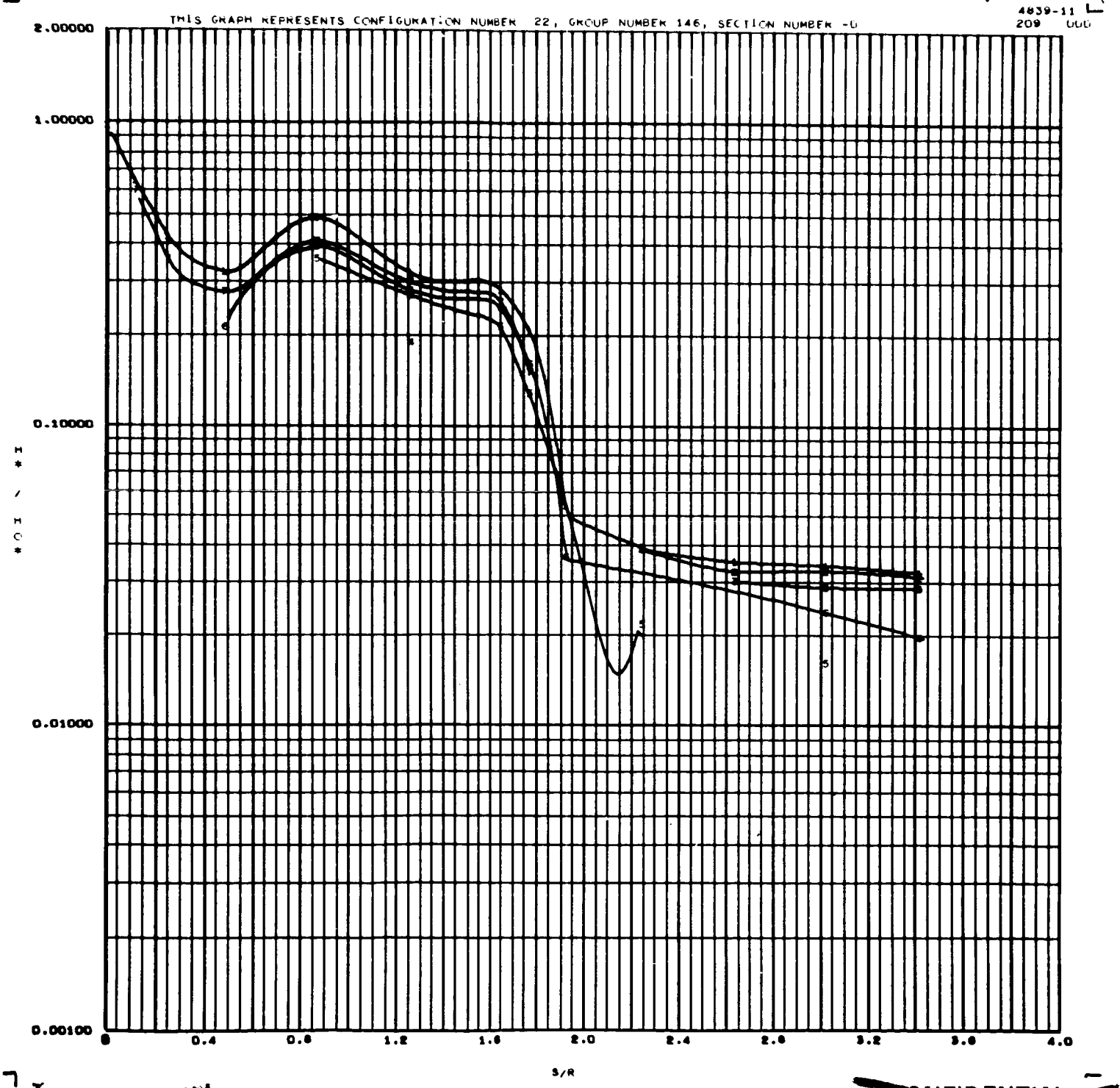
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 146
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
M_O * 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1793.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

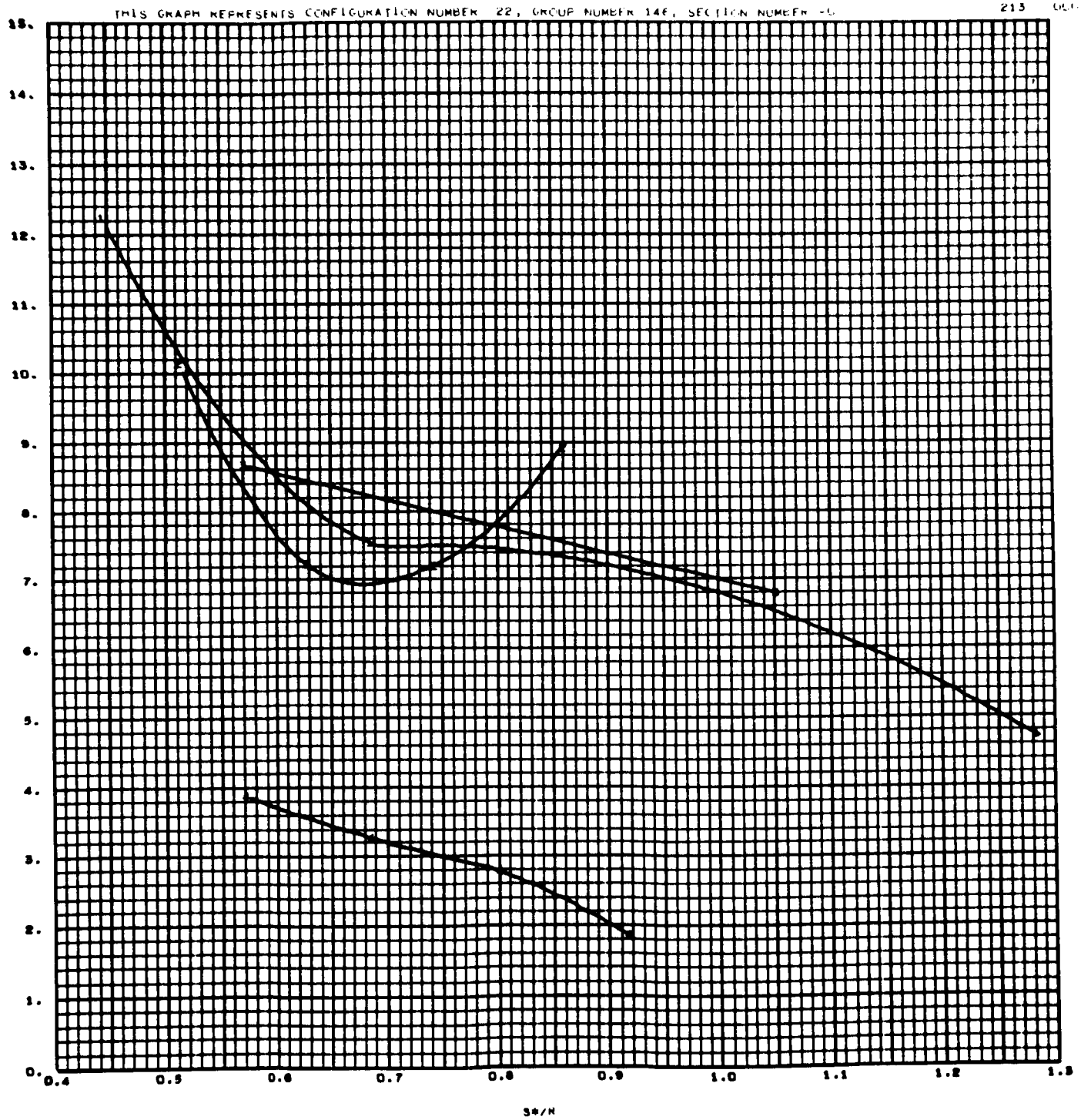
APOLLO

A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 146
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0841 x 10^6
H_o * 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1793.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL	
1.0	1	WINDWARD STRAKE DATA
2.0	2	
3.0	3	
4.0	4	LEEWARD STRAKE DATA

4839-11
213



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HEAT TRANSFER TEST

APOLLO

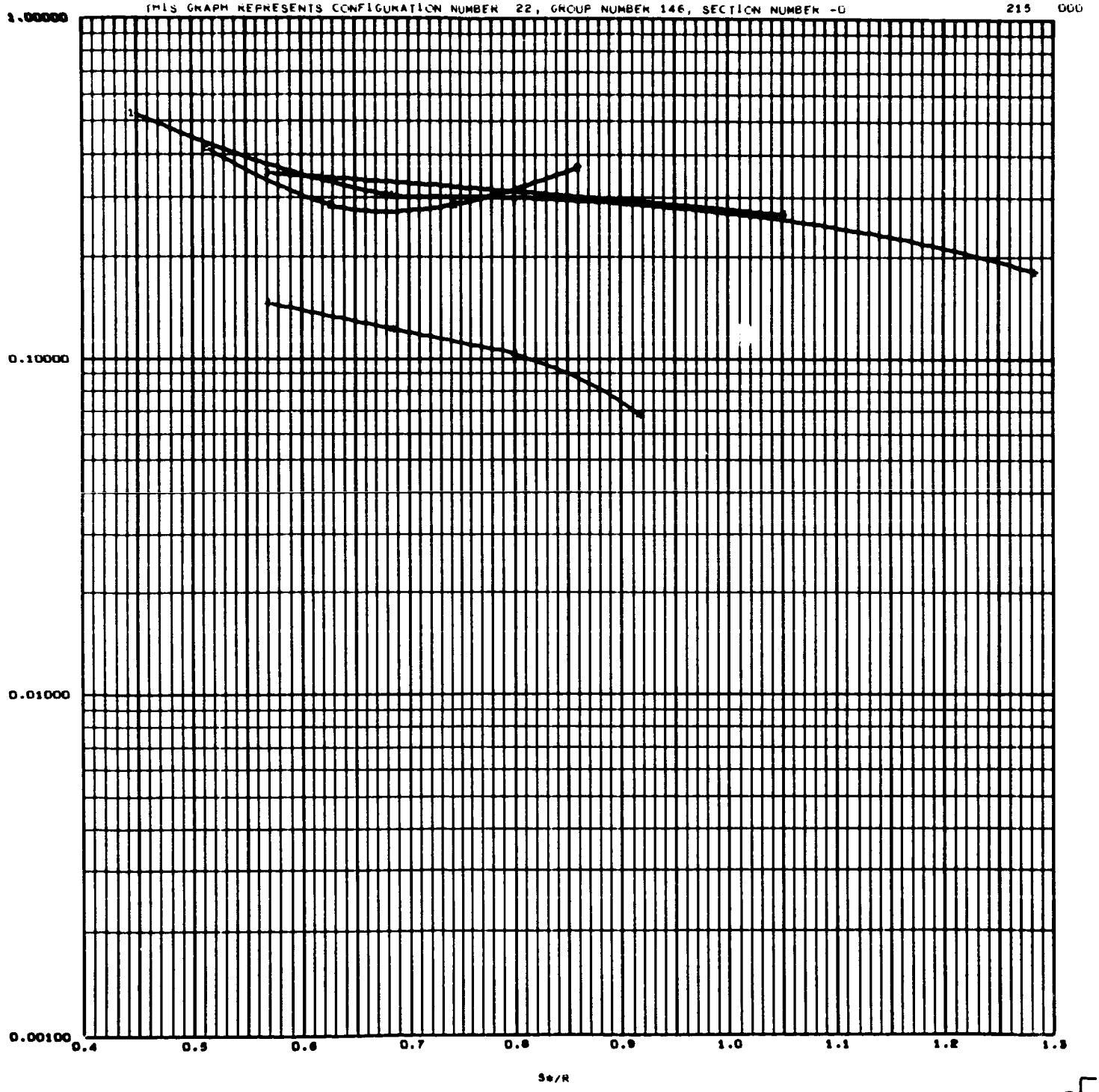
A E D C TUNNEL C

CONFIGURATION 22 MACH NO. 10.13
GROUP NO. 146
TOTAL PRESSURE 757.2 PSIA
REYNOLDS NUMBER PER INCH 0.0841 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1793.30 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

TAU	SYMBOL
1.0	1
2.0	2
3.0	3
4.0	4

4839-11
215 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 22, GROUP NUMBER 146, SECTION NUMBER -0



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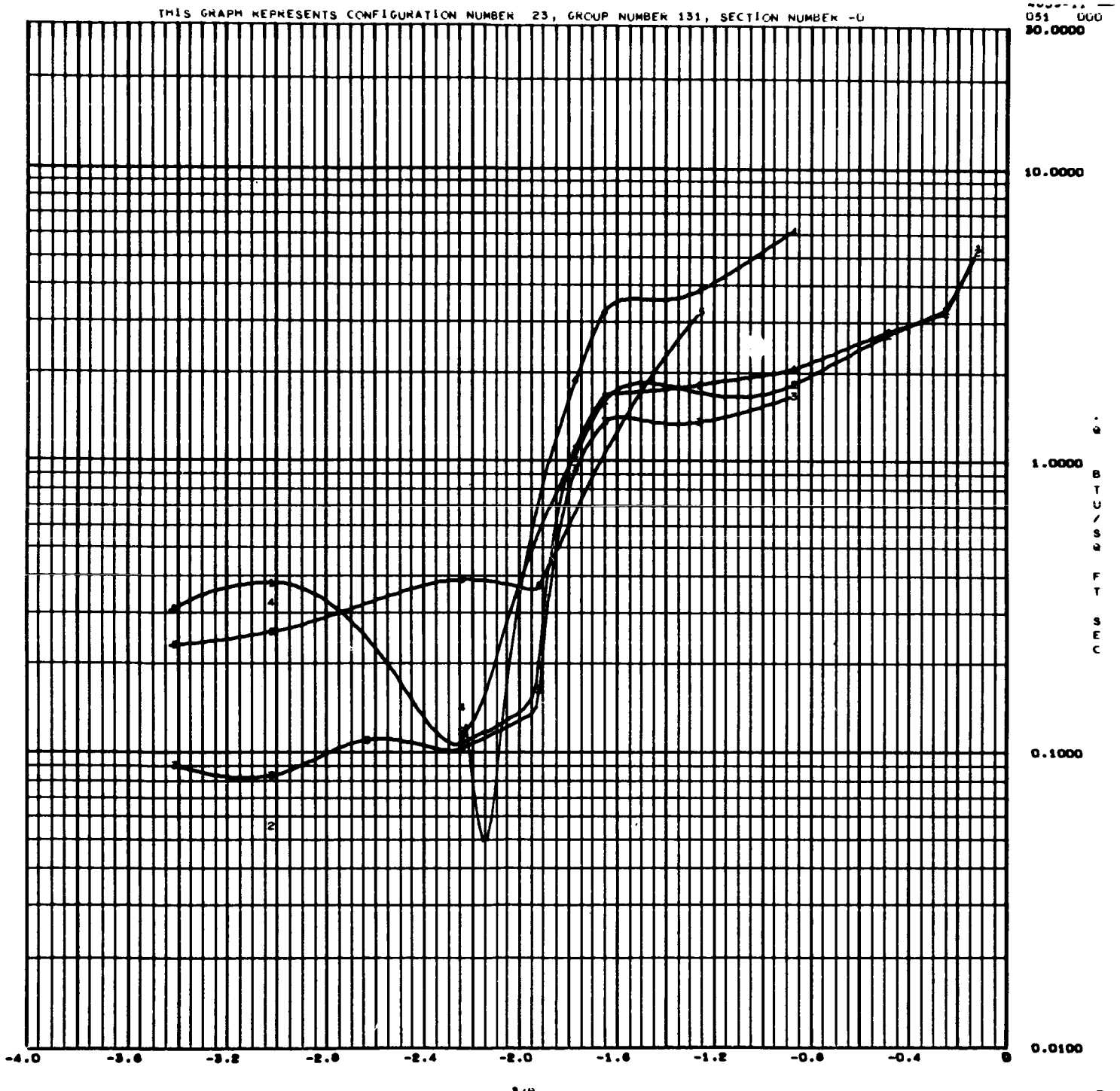
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 131
TOTAL PRESSURE 216.0 PSIA
REYNOLDS NUMBER PER INCH 0.0278 X 10^6
H_o * 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1662.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

[redacted]

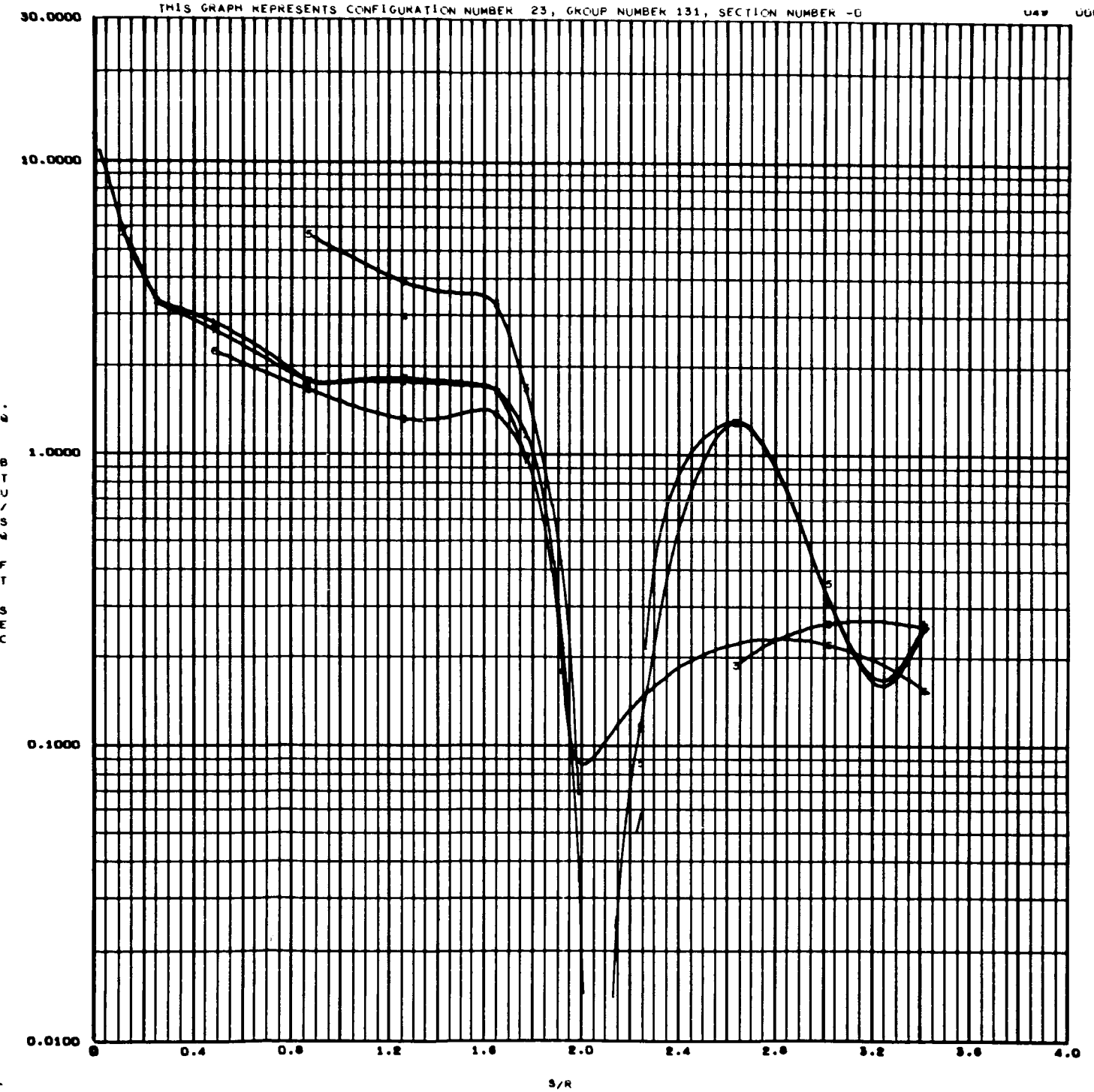
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 131
TOTAL PRESSURE 216.0 PSIA
REYNOLDS NUMBER PER INCH 0.0278 x 10^6
H_o^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1662.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 131
TOTAL PRESSURE 216.0 PSIA
REYNOLDS NUMBER PER INCH 0.0278 X 10^6
μ_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1662.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 131, SECTION NUMBER -0

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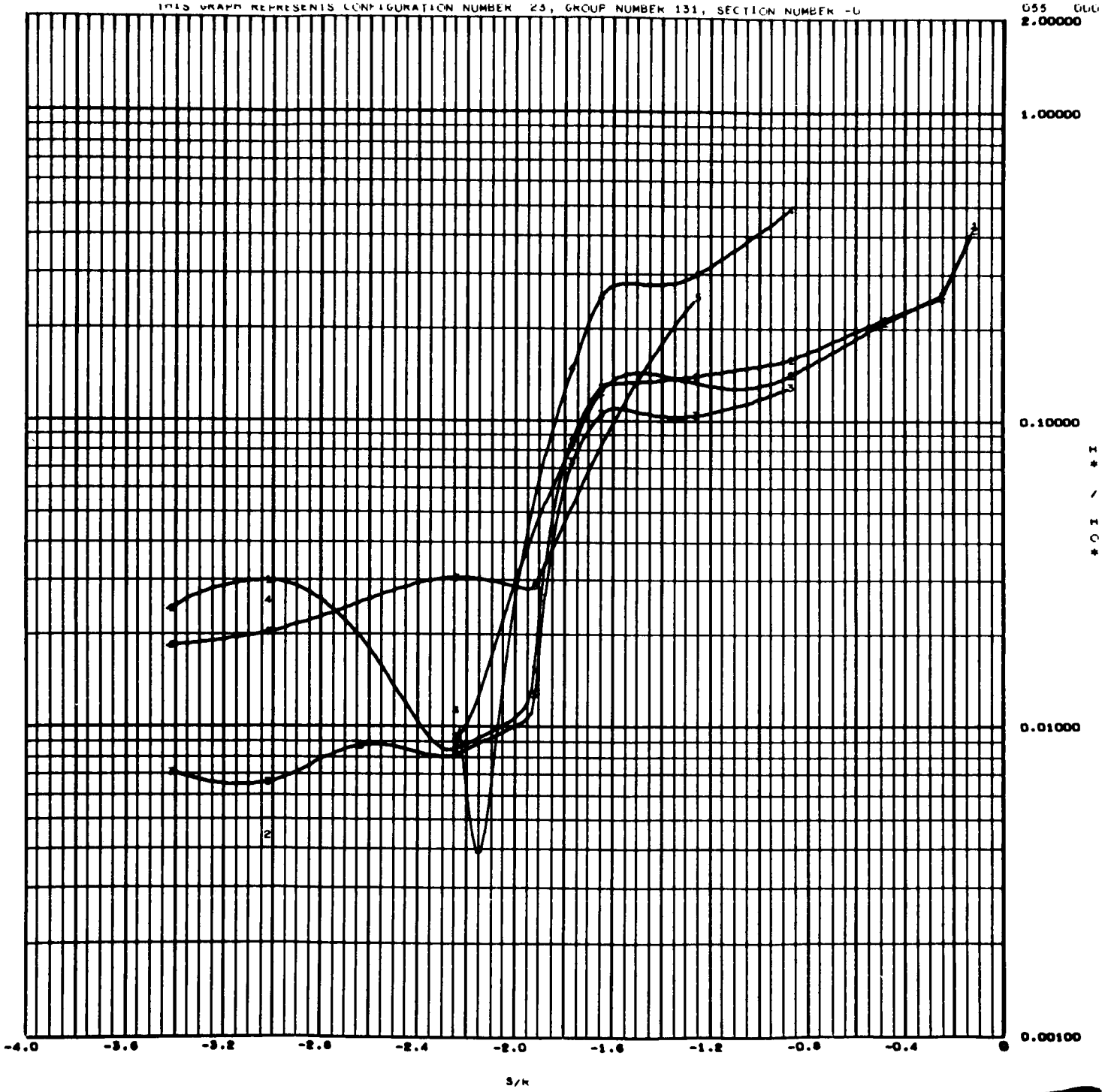

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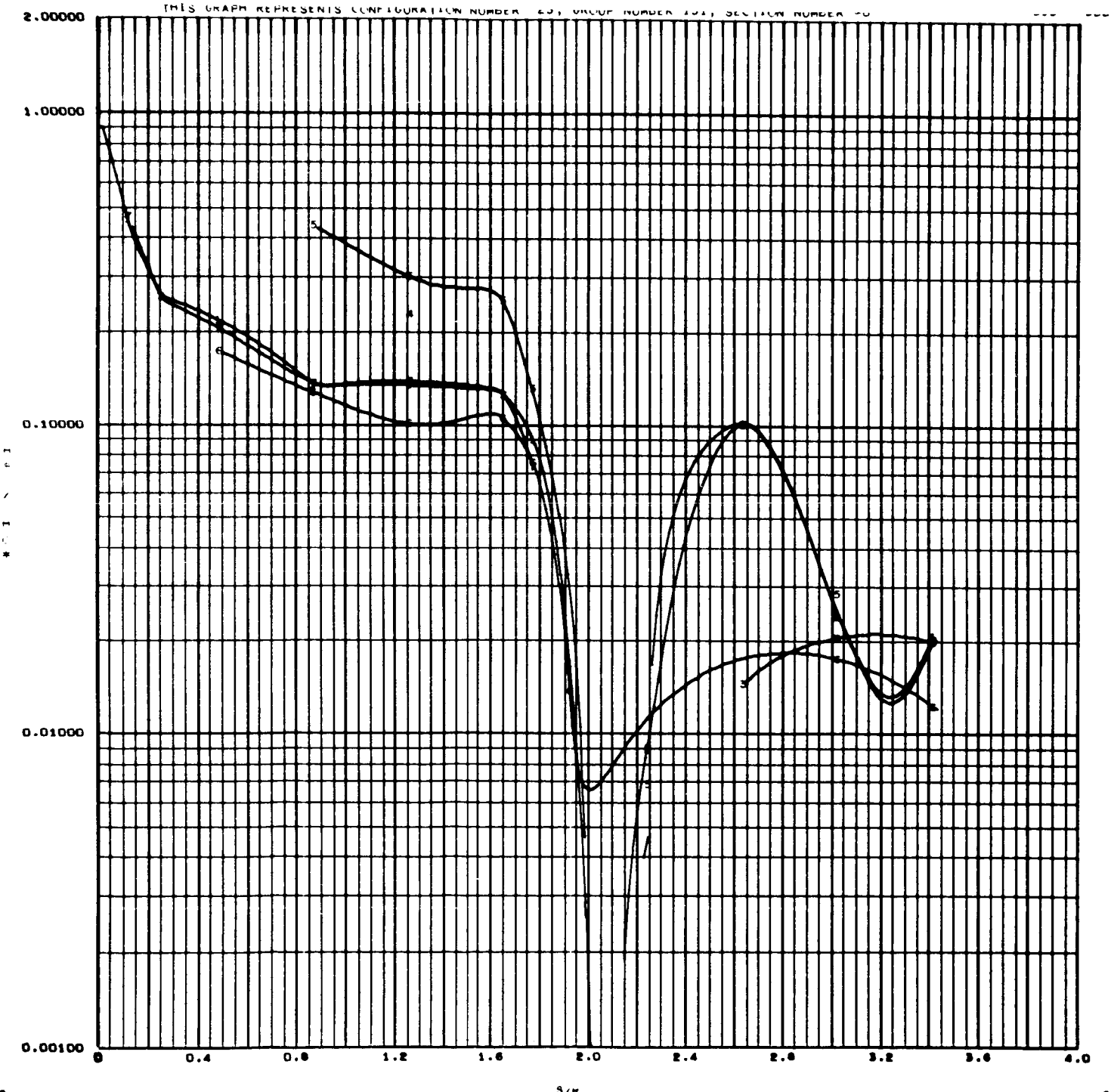
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 131
TOTAL PRESSURE 216.0 PSIA
REYNOLDS NUMBER PER INCH 0.0278 x 10^6
μ_o^* 0.04333 LB/FT^2 x SEC
TOTAL TEMPERATURE 1662.40 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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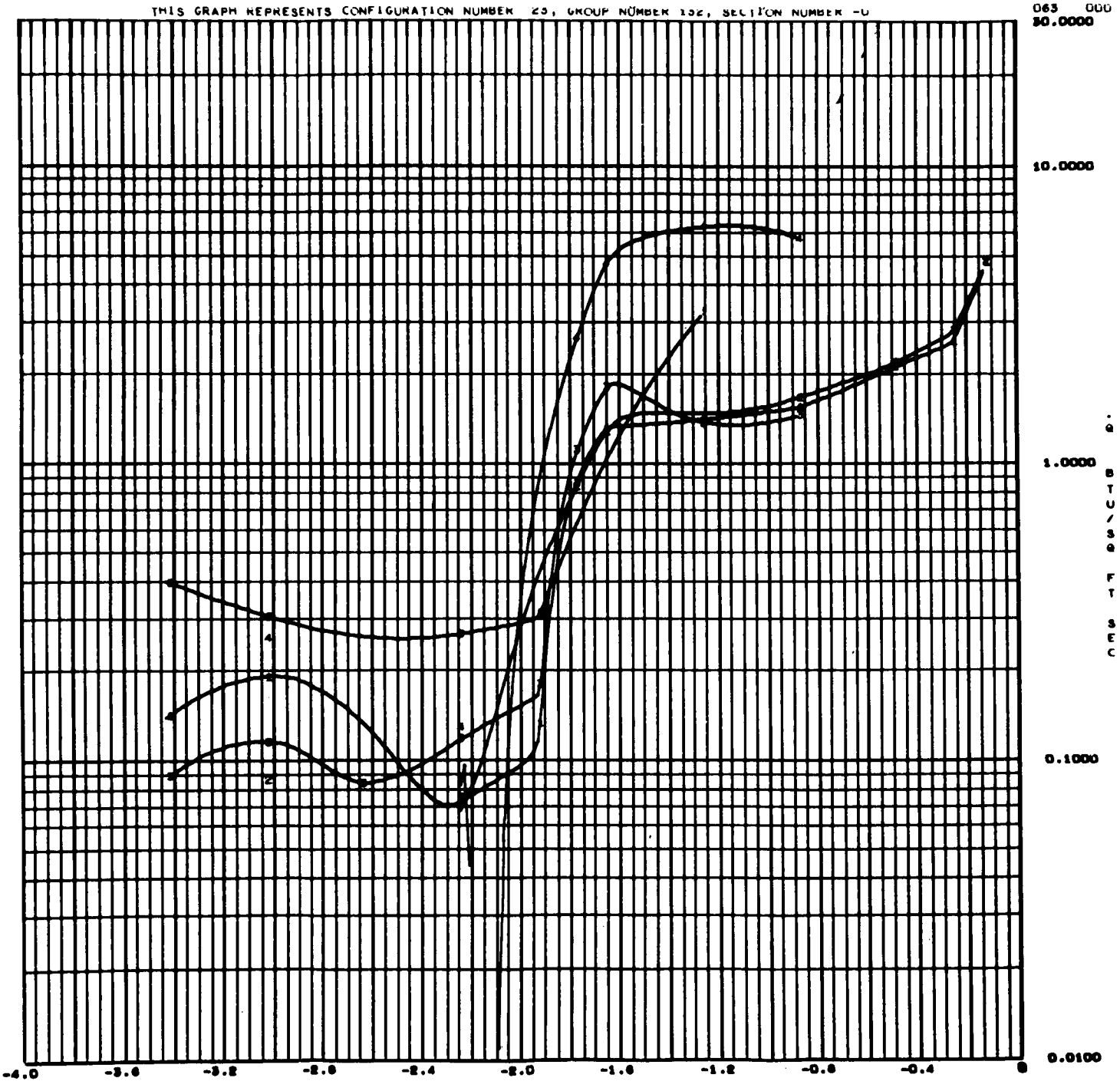
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 132
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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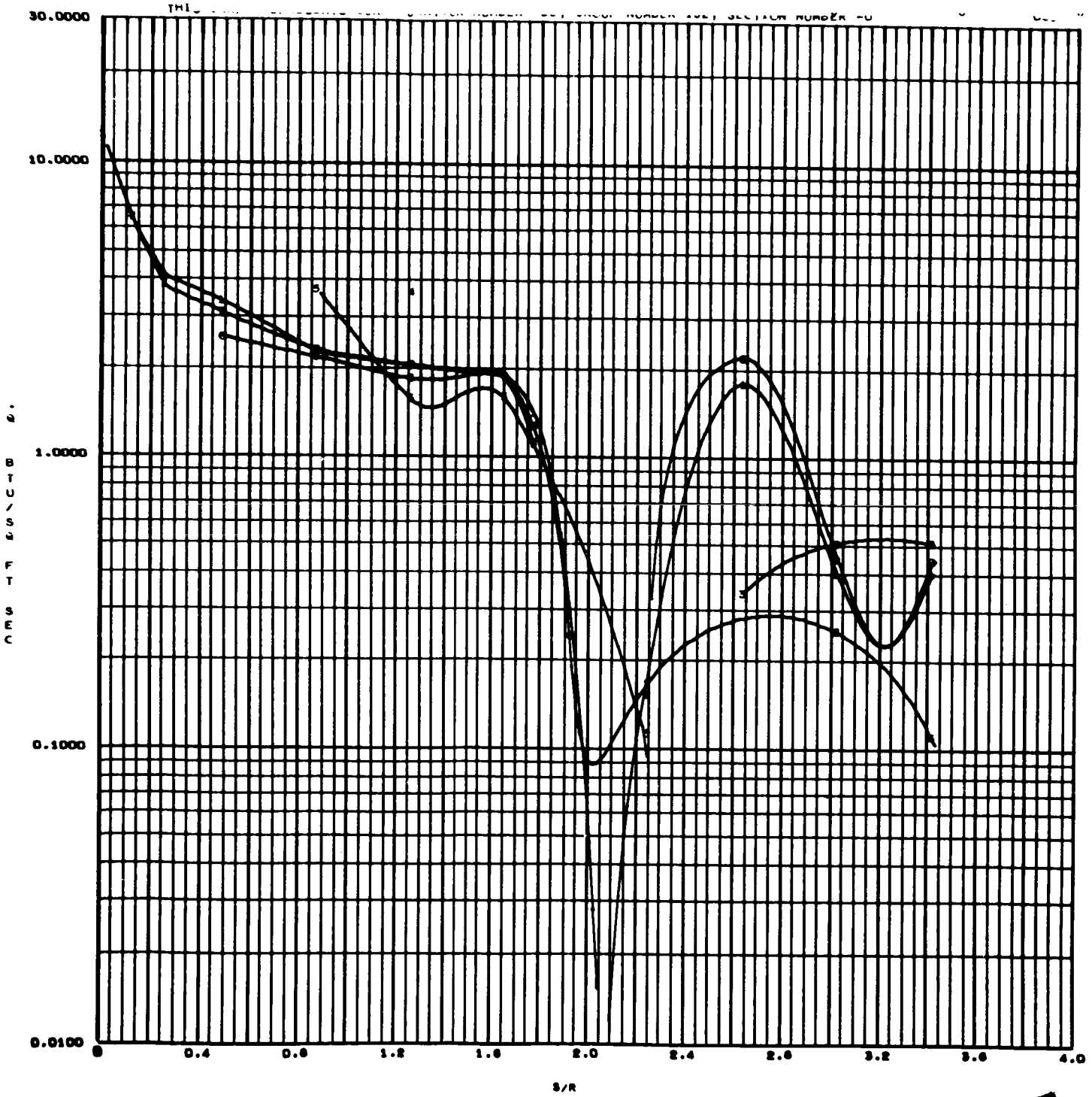
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 132
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0277 x 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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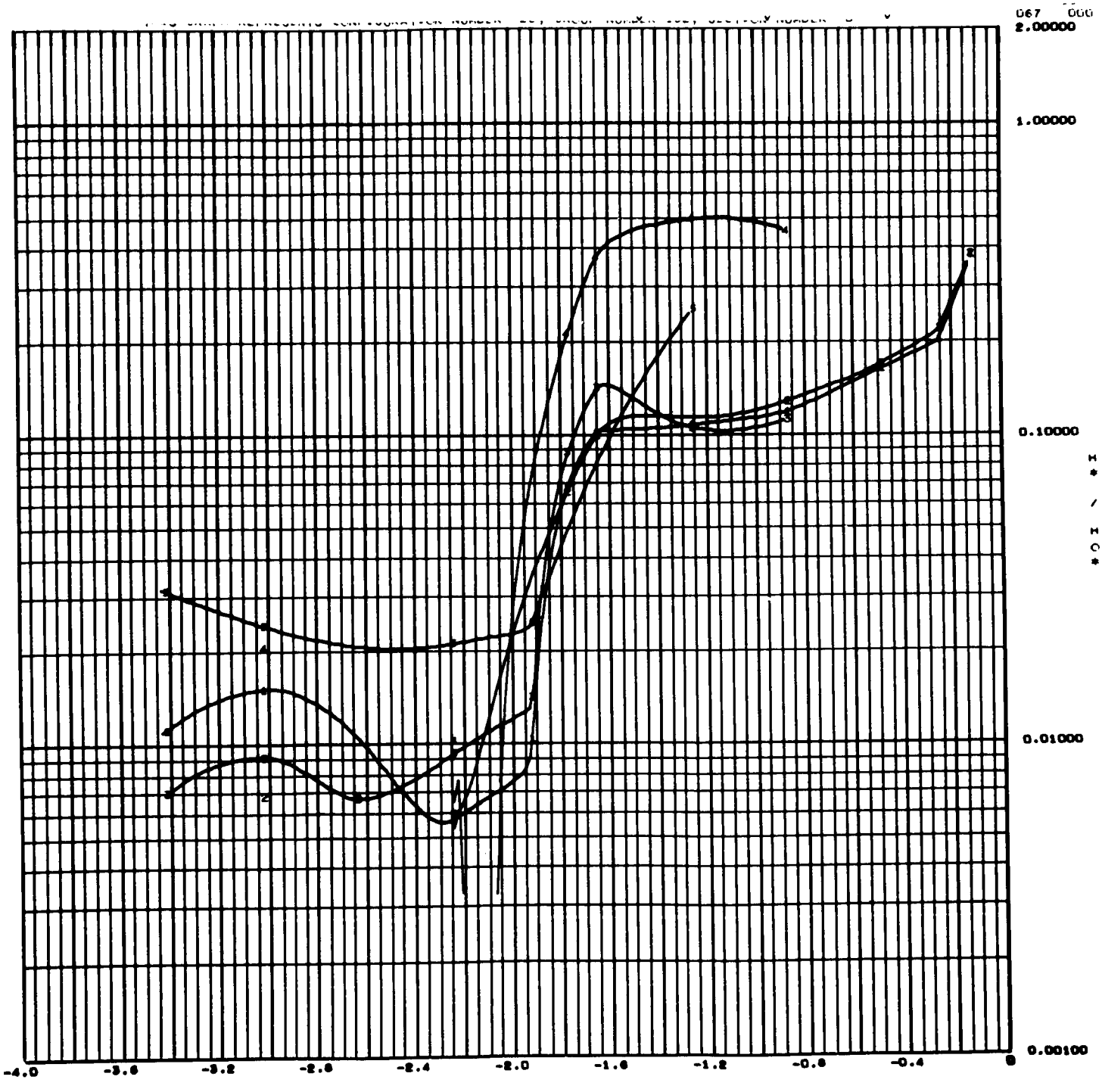
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 132
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0277 X 10^6
H_O^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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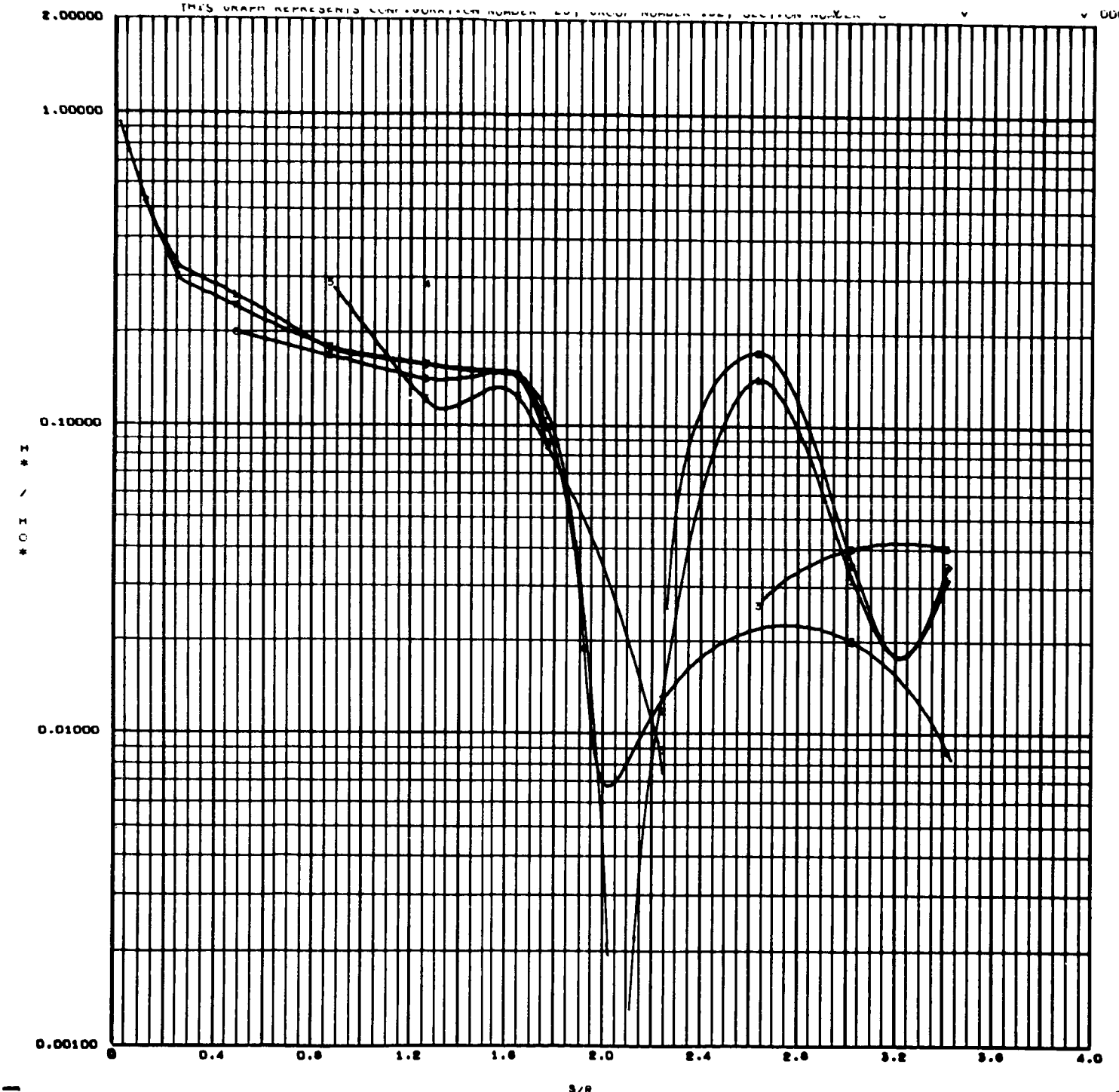
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 132
TOTAL PRESSURE 214.7 PSIA
REYNOLDS NUMBER PER INCH 0.0277 x 10^6
μ_0^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1661.40 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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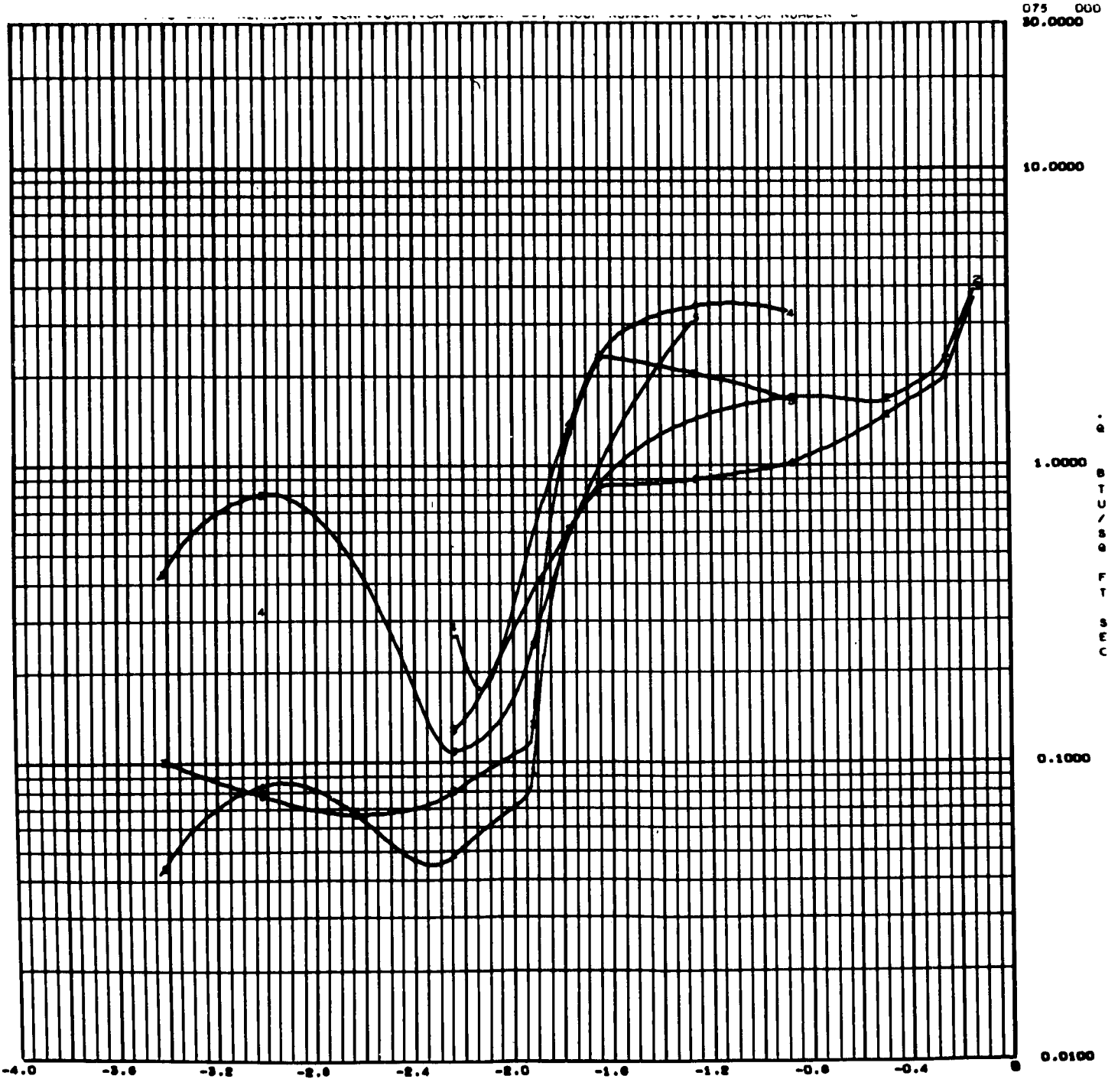
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 133
TOTAL PRESSURE 221.2 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1658.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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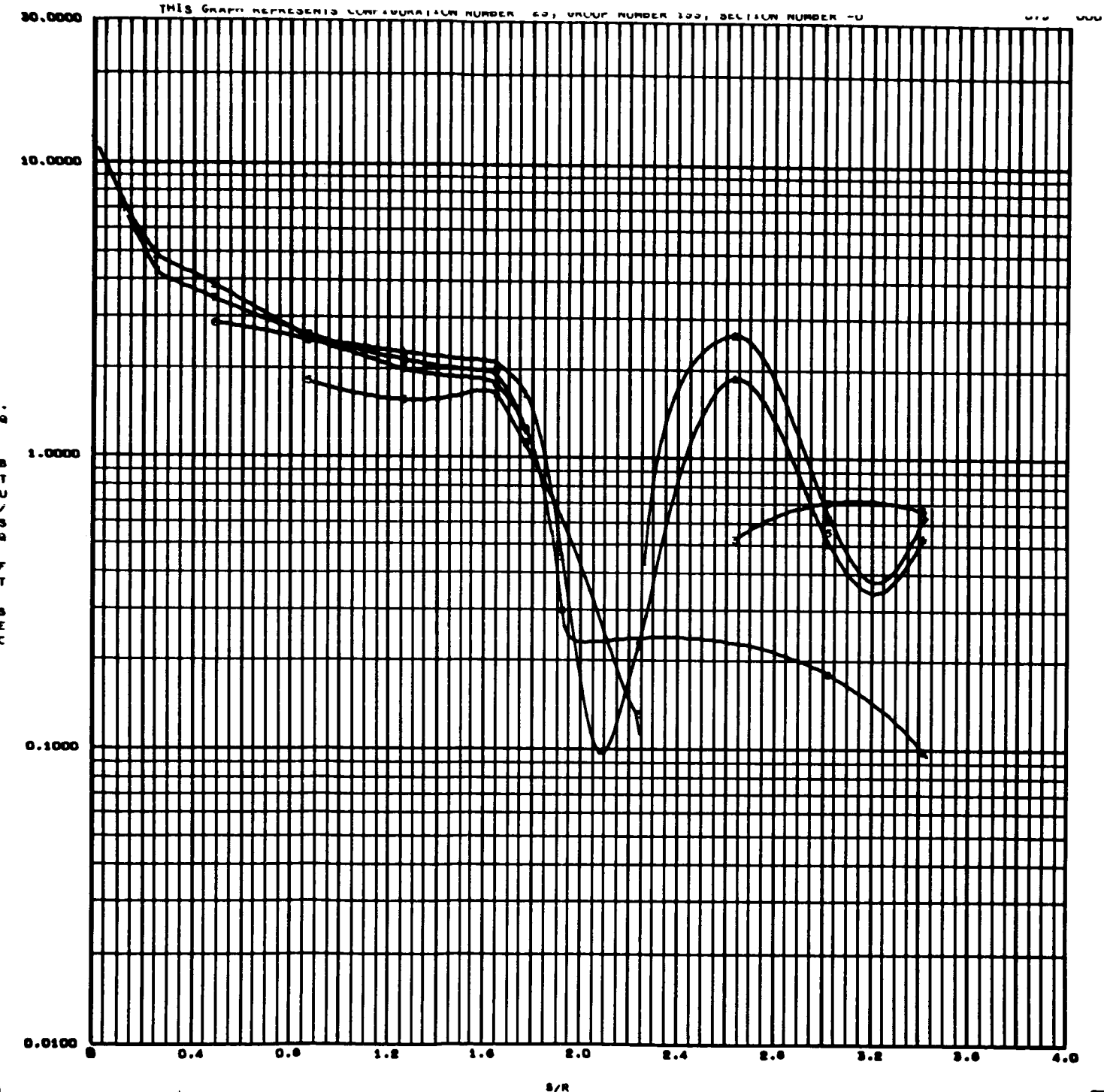
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 133
TOTAL PRESSURE 221.2 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1658.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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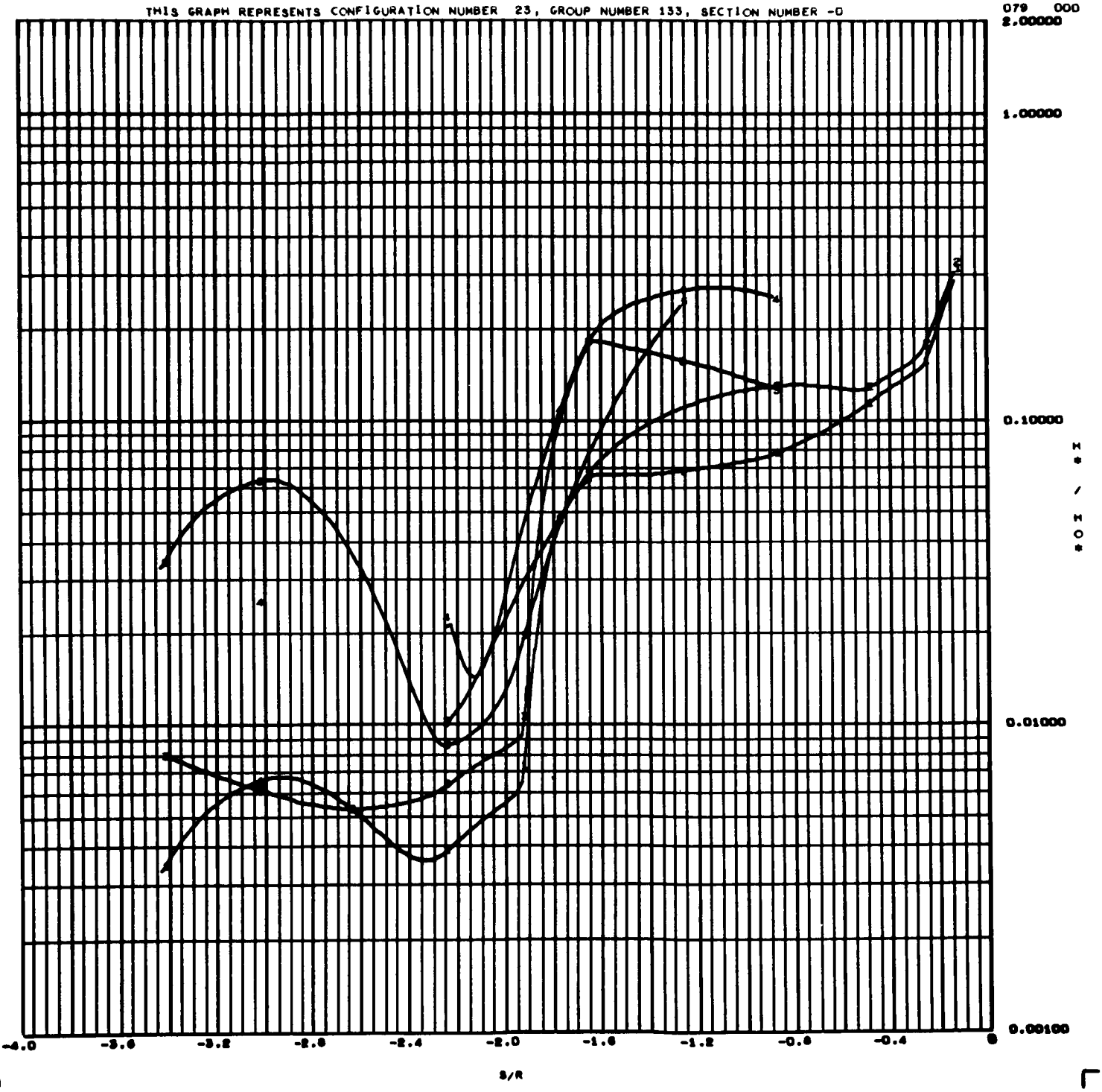
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 133
TOTAL PRESSURE 221.2 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1658.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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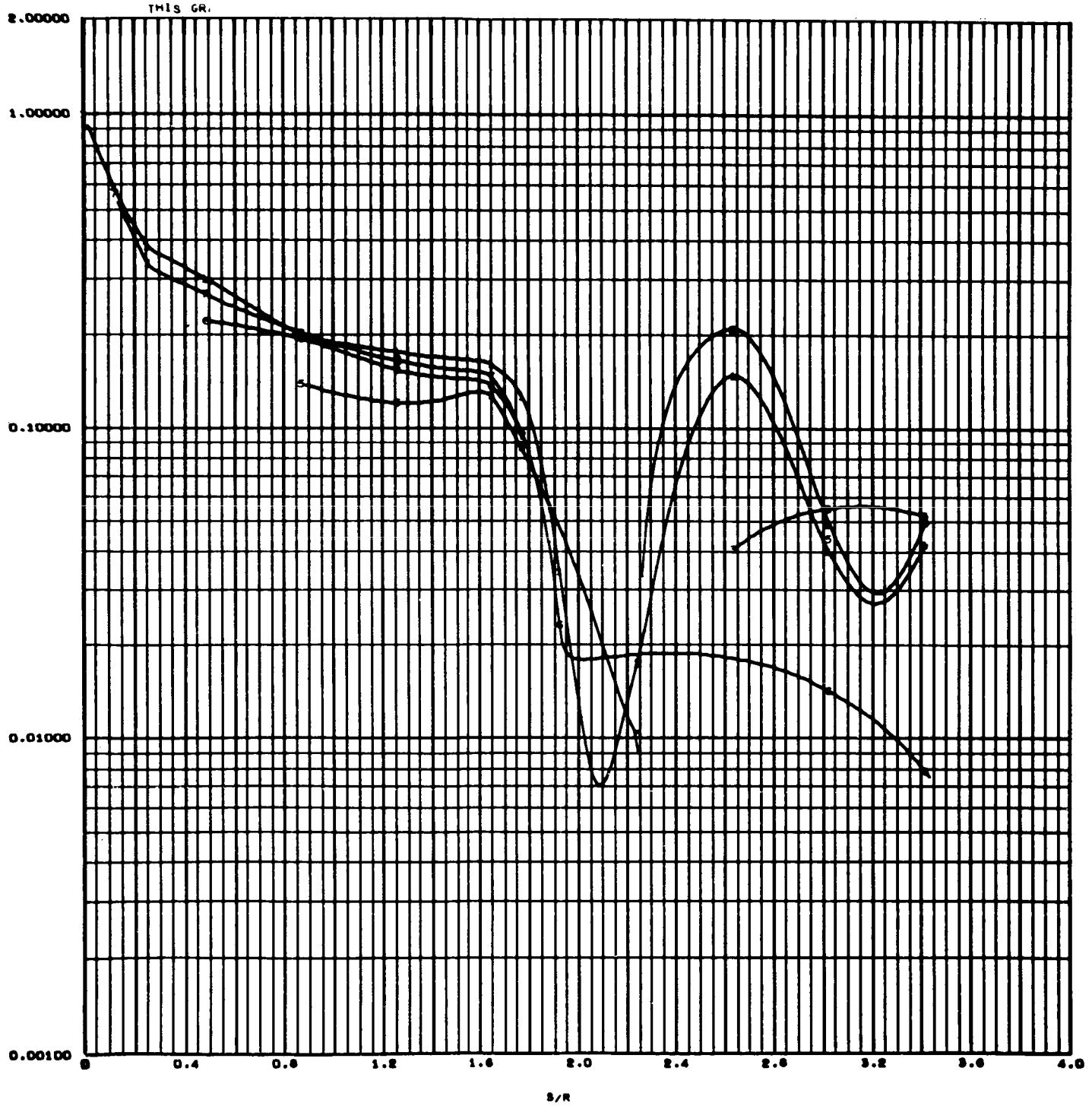
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 133
TOTAL PRESSURE 221.2 PSIA
REYNOLDS NUMBER PER INCH 0.0286 X 10^6
H_O^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1658.00 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

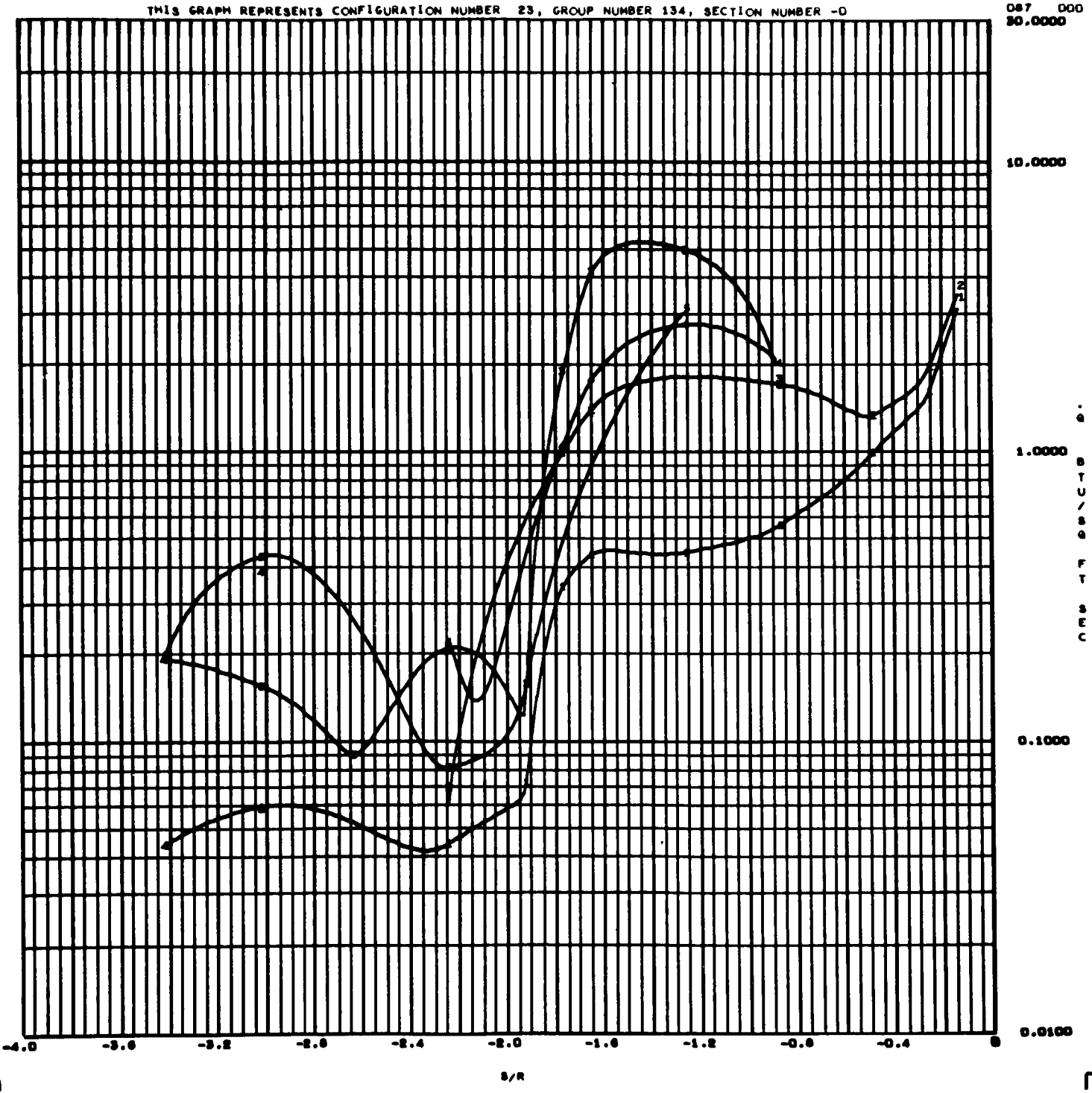
APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 134
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0278 X 10^6
H_O^* 0.04333 LB/FT^2 X SEC
TOTAL TEMPERATURE 1665.60 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 134, SECTION NUMBER -0



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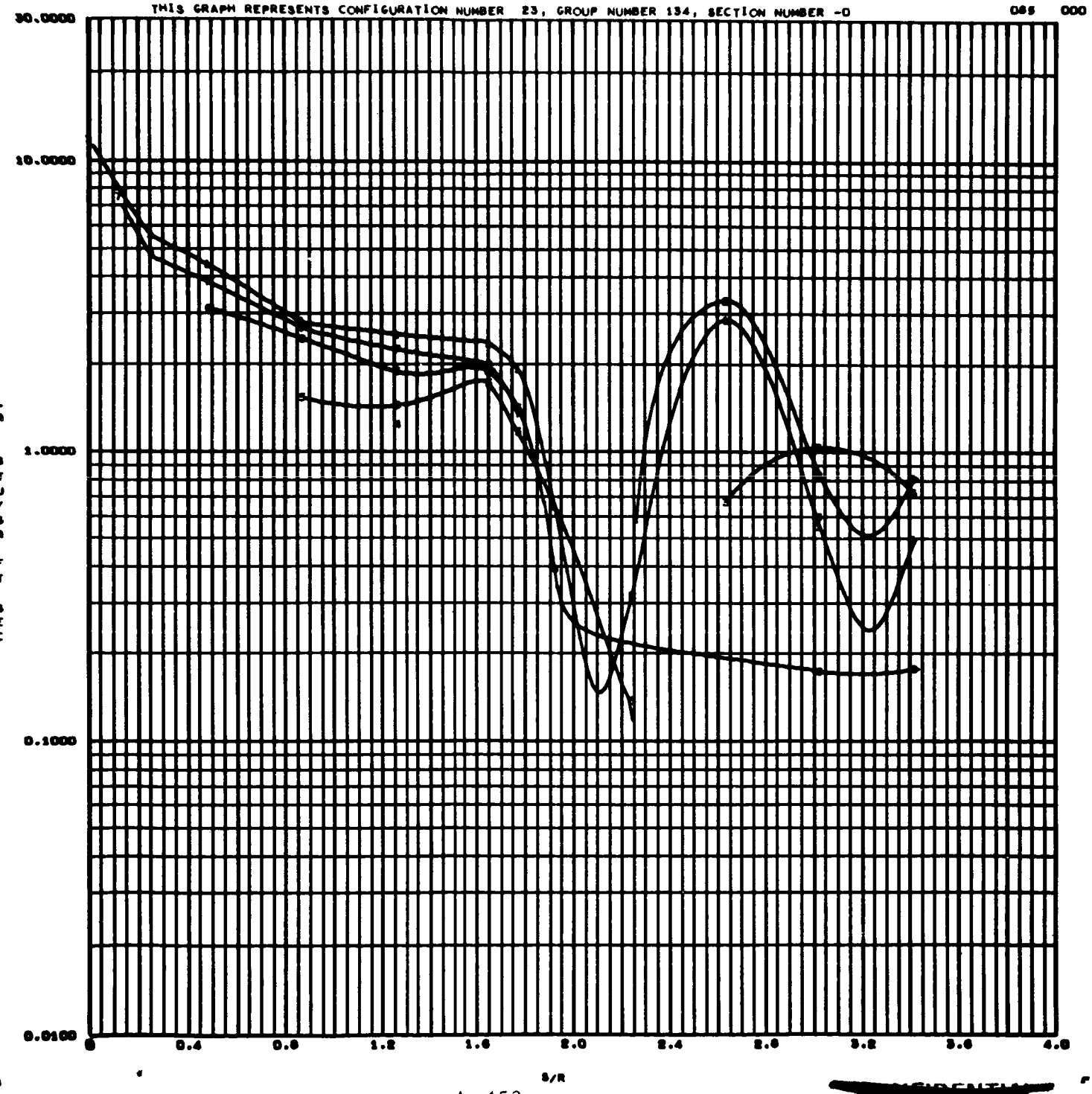
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 134
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0278 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1665.60 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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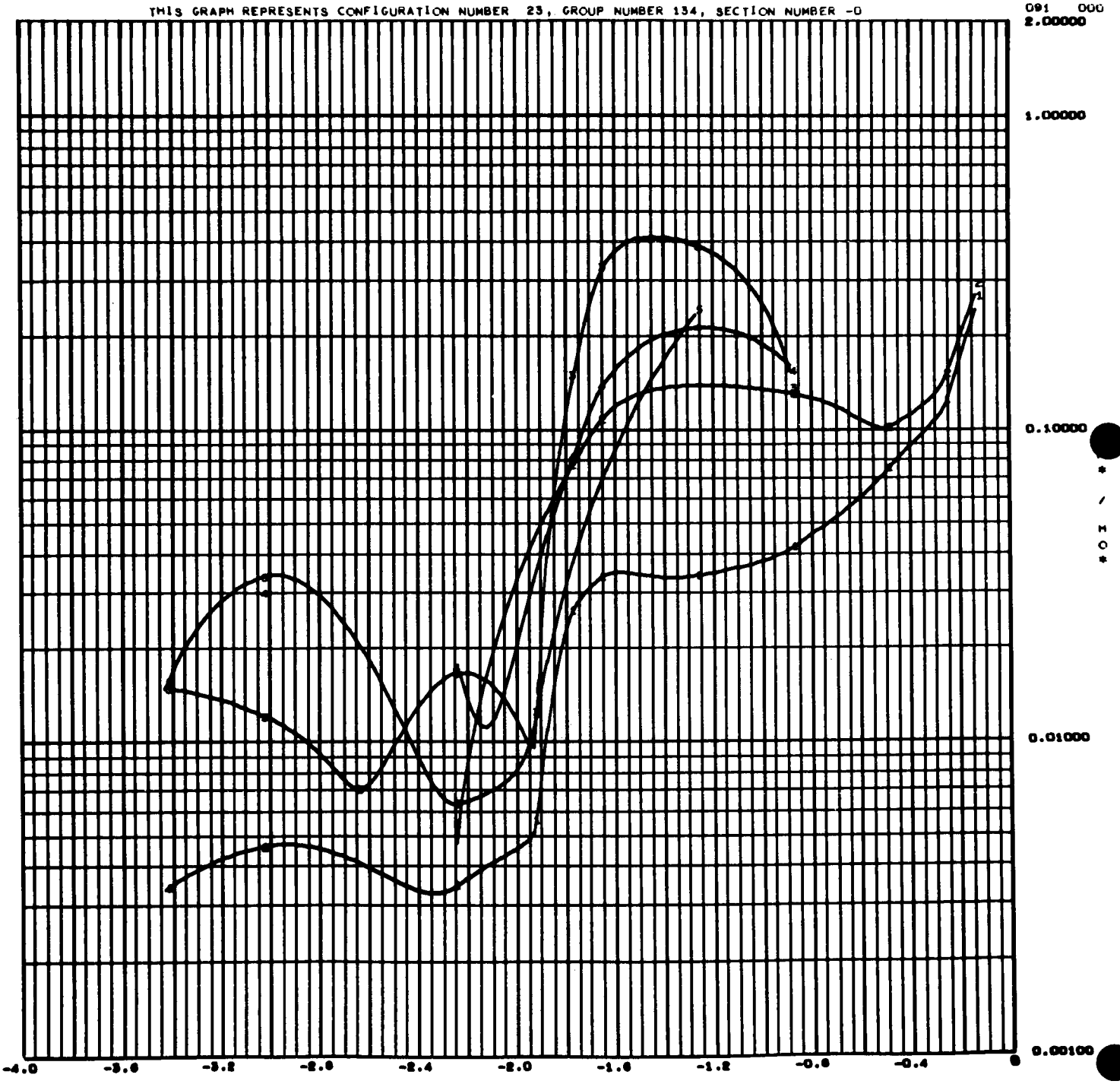
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 134
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0278 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1665.60 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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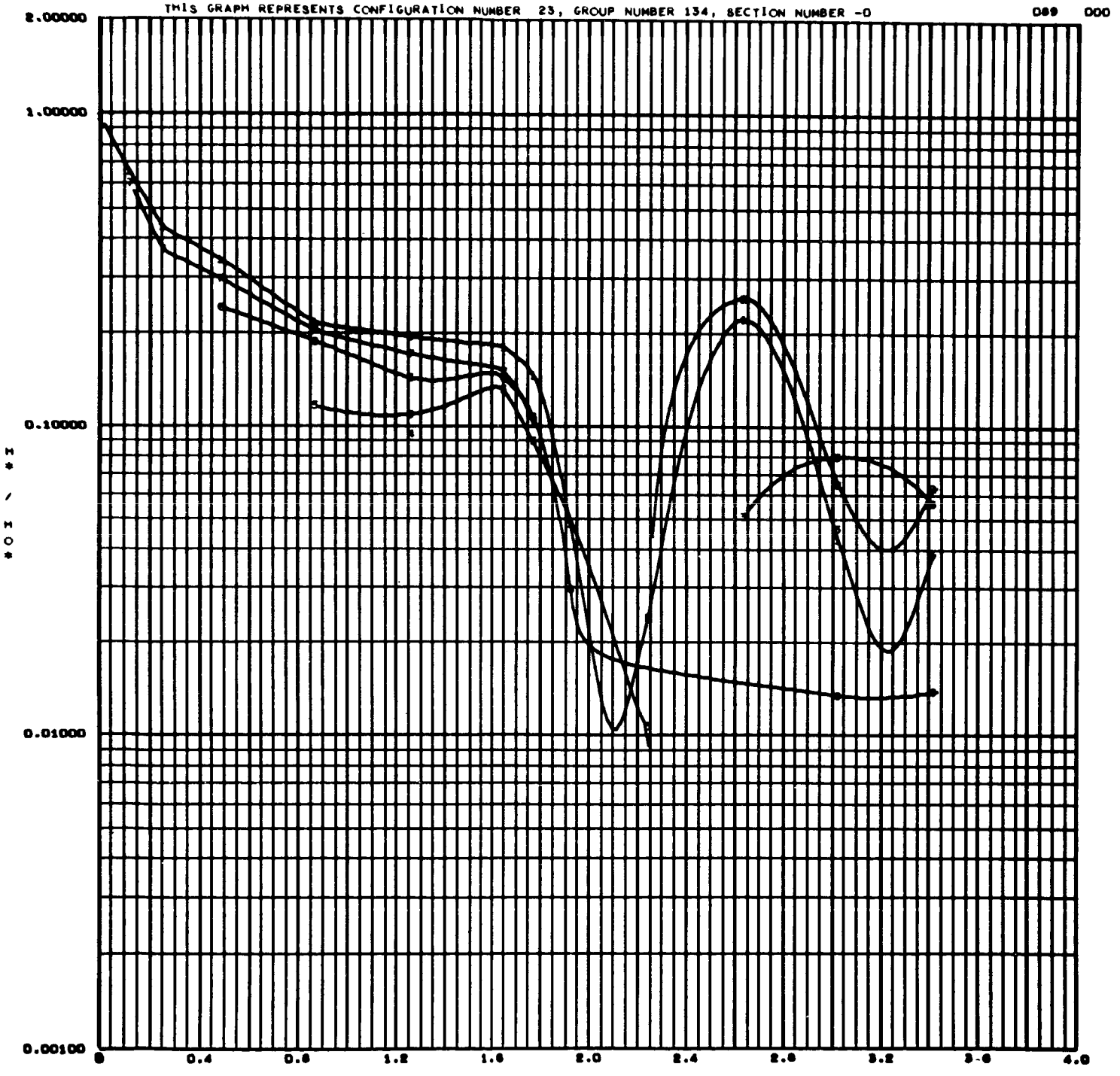
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.04
GROUP NO. 134
TOTAL PRESSURE 216.2 PSIA
REYNOLDS NUMBER PER INCH 0.0278 X 10^6
H_o^* 0.04333 LB/FT X SEC
TOTAL TEMPERATURE 1665.60 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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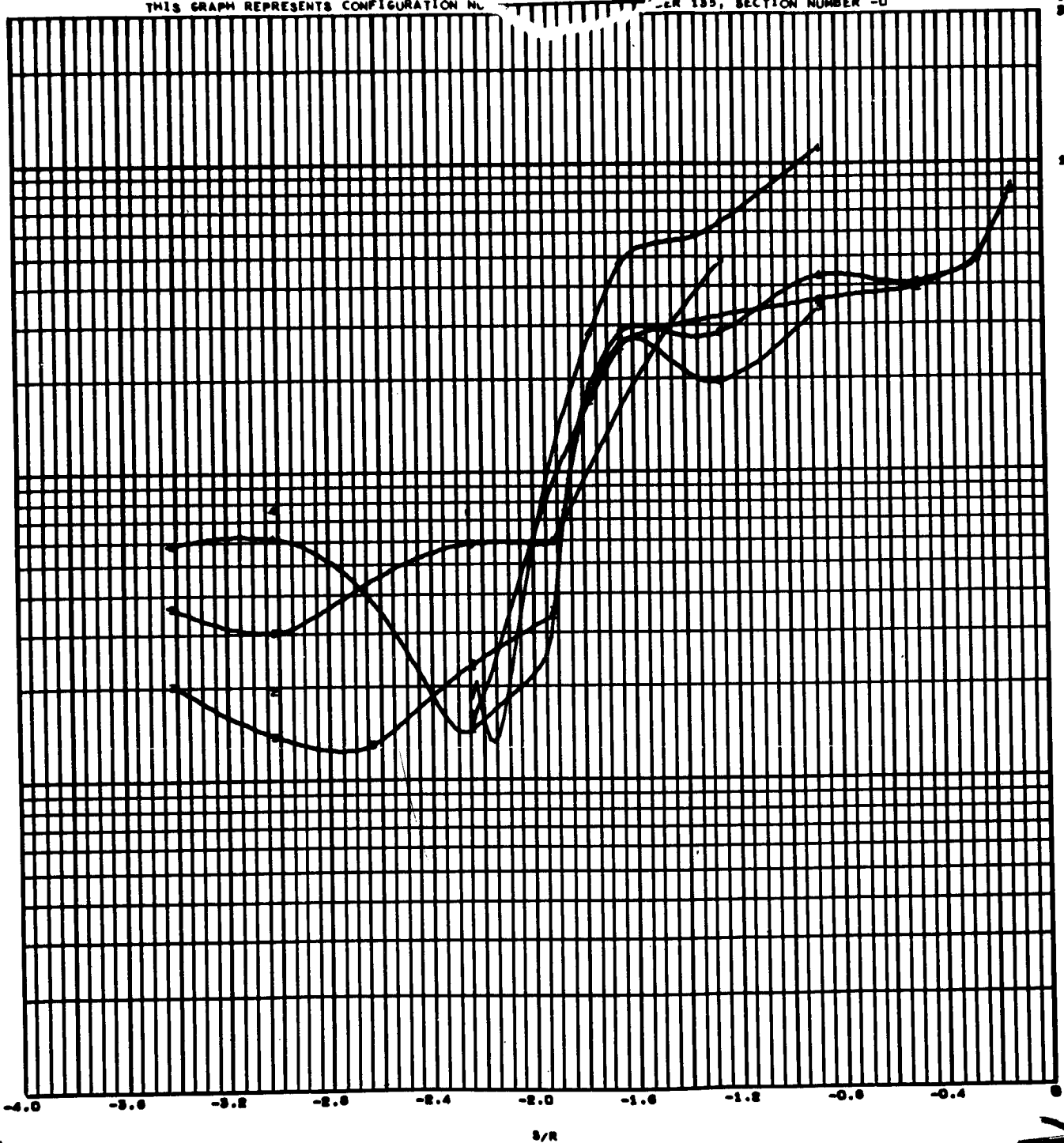
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 135
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1718.90 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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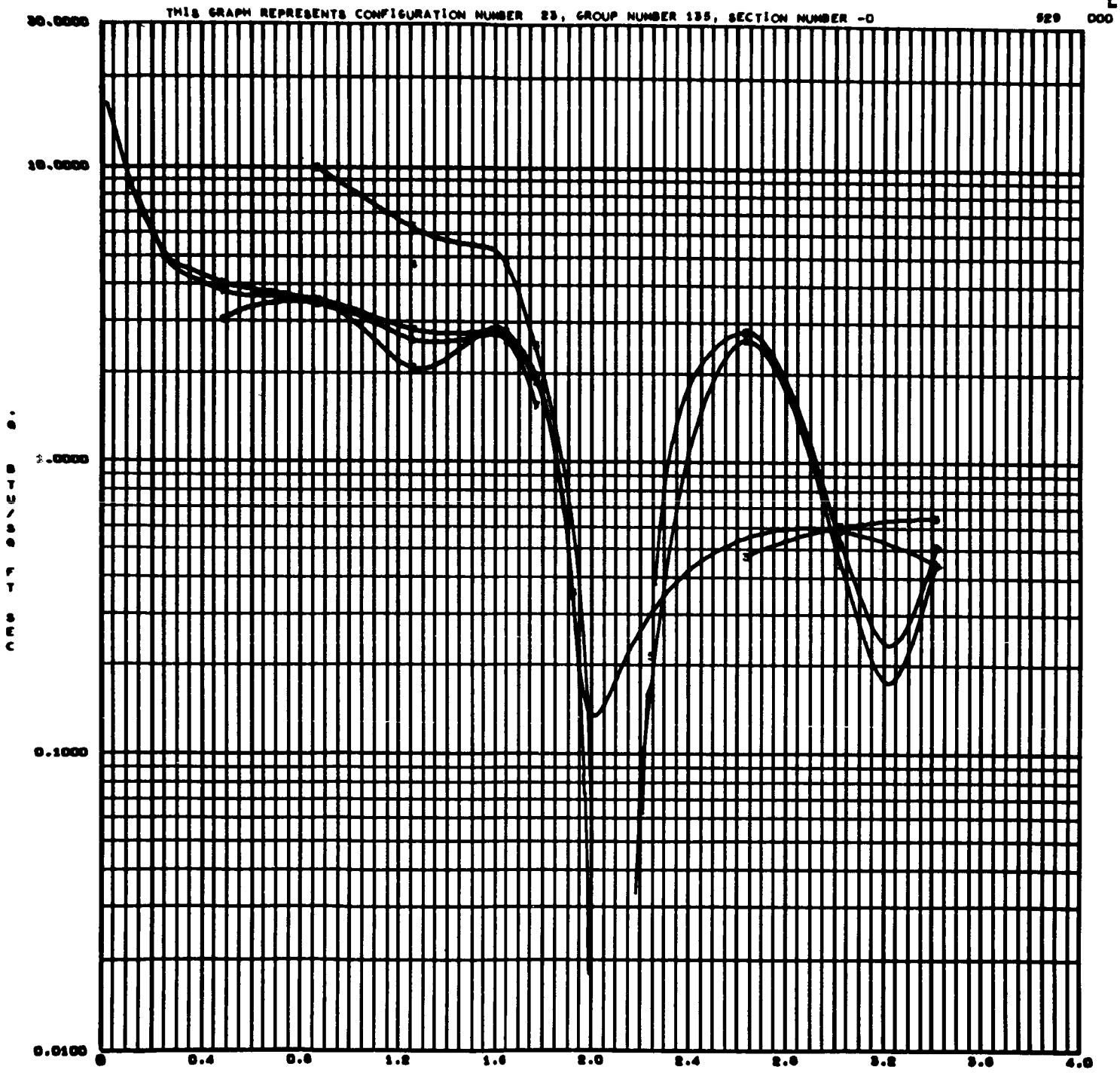
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 135
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
M_O * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1718.90 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

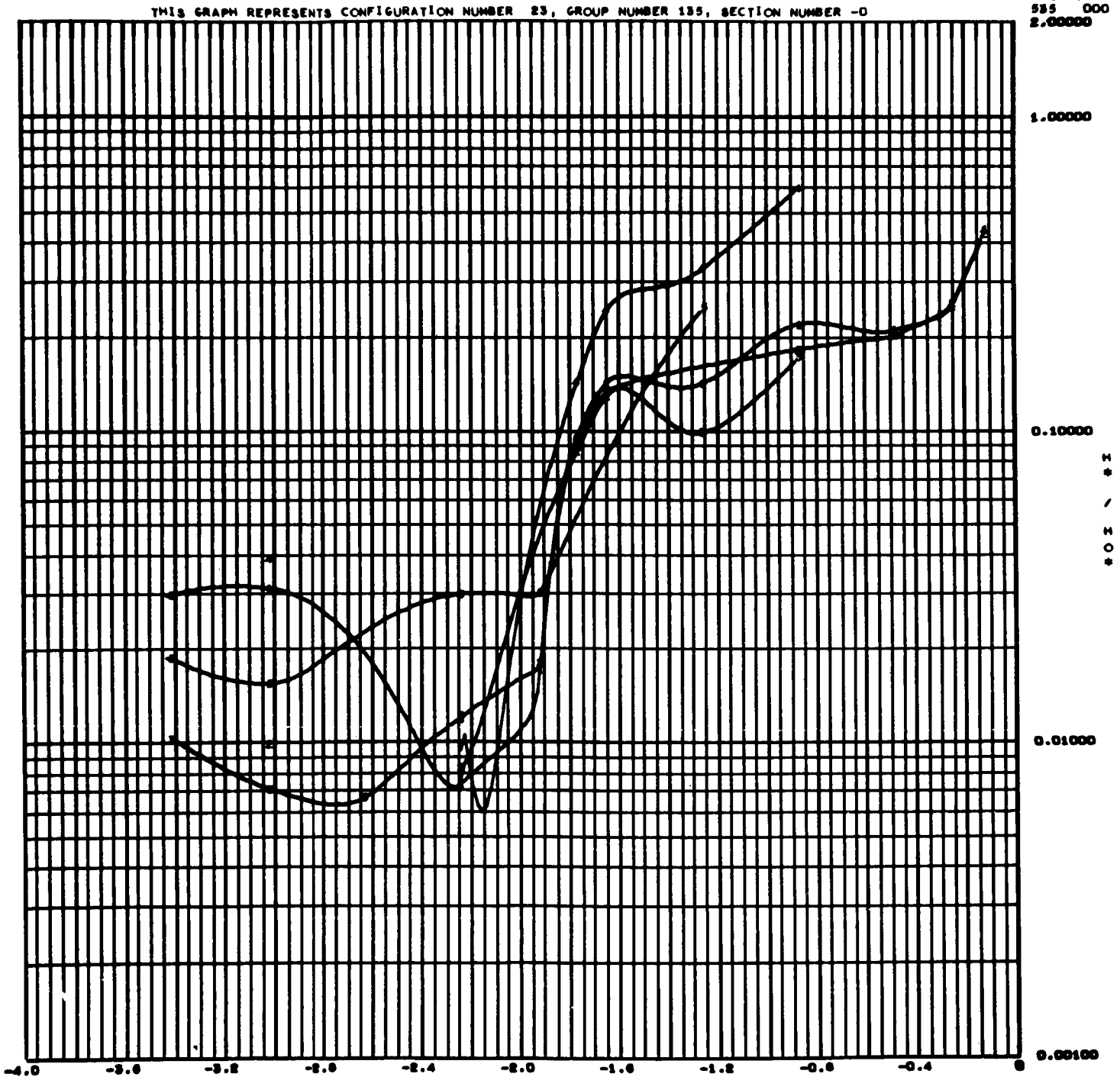
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 135
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1718.90 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 135, SECTION NUMBER -0

4839-11
535 000



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HEAT TRANSFER TEST

APOLLO

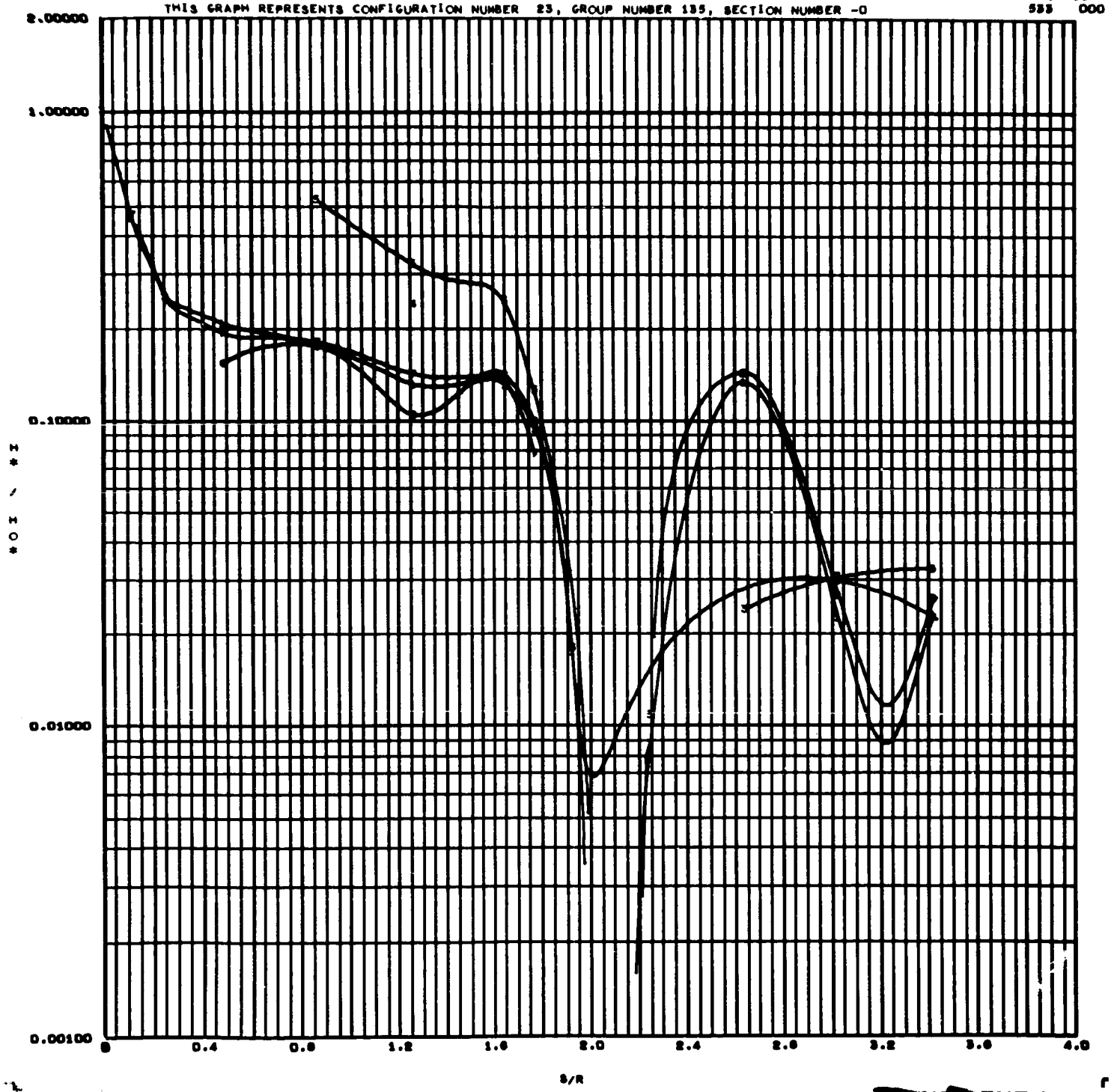
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 135
TOTAL PRESSURE 460.0 PSIA
REYNOLDS NUMBER PER INCH 0.0553 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1710.90 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11 L
535 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 135, SECTION NUMBER -0



CONFIDENTIAL

~~CONFIDENTIAL~~

HEAT TRANSFER TEST

APOLLO

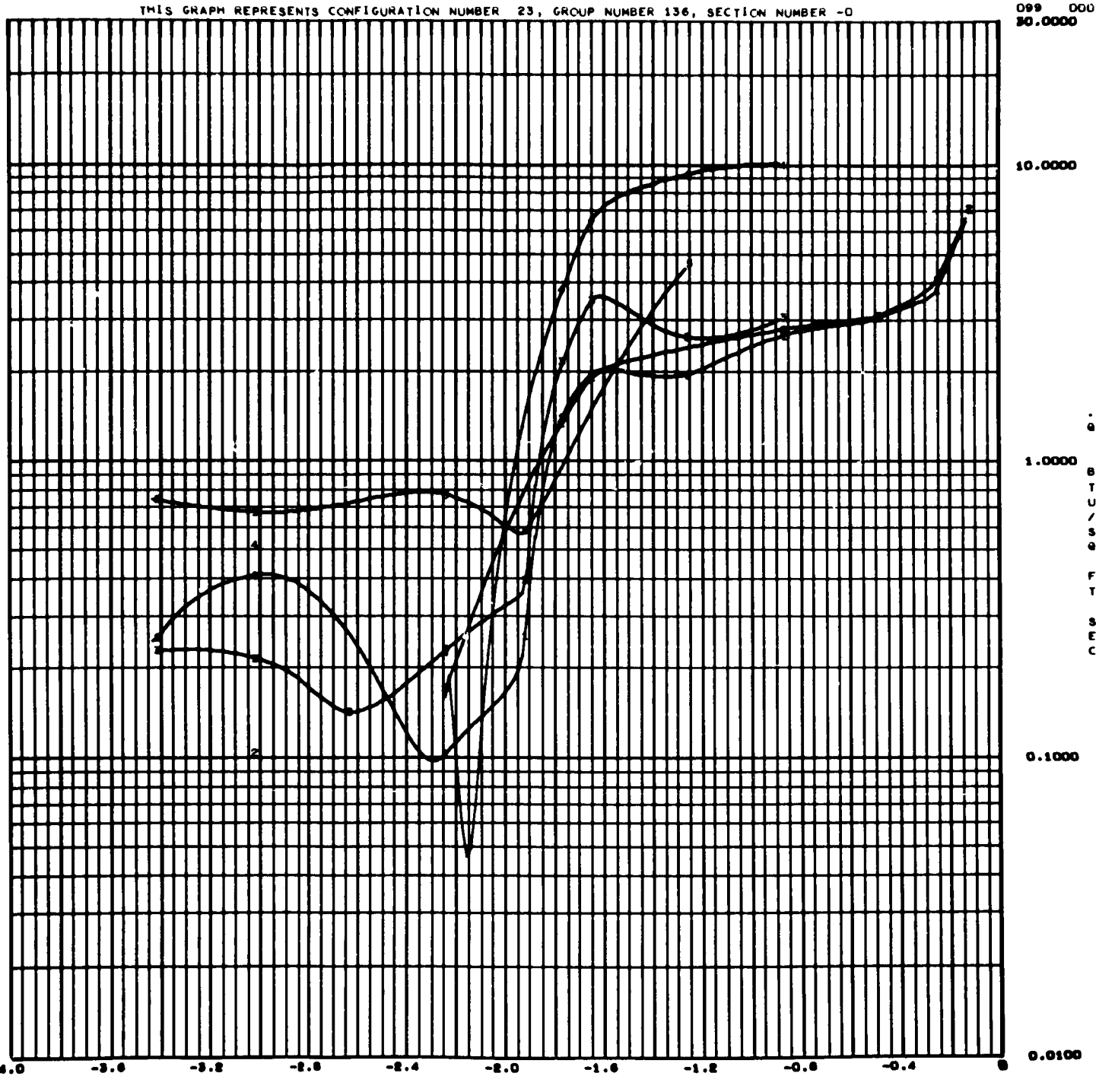
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.10
GROUP NO. 136
TOTAL PRESSURE 470.2 PSIA
REYNOLDS NUMBER PER INCH 0.0565 X 10^6
H_o * 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 136, SECTION NUMBER -0

4839-11 L
099 000



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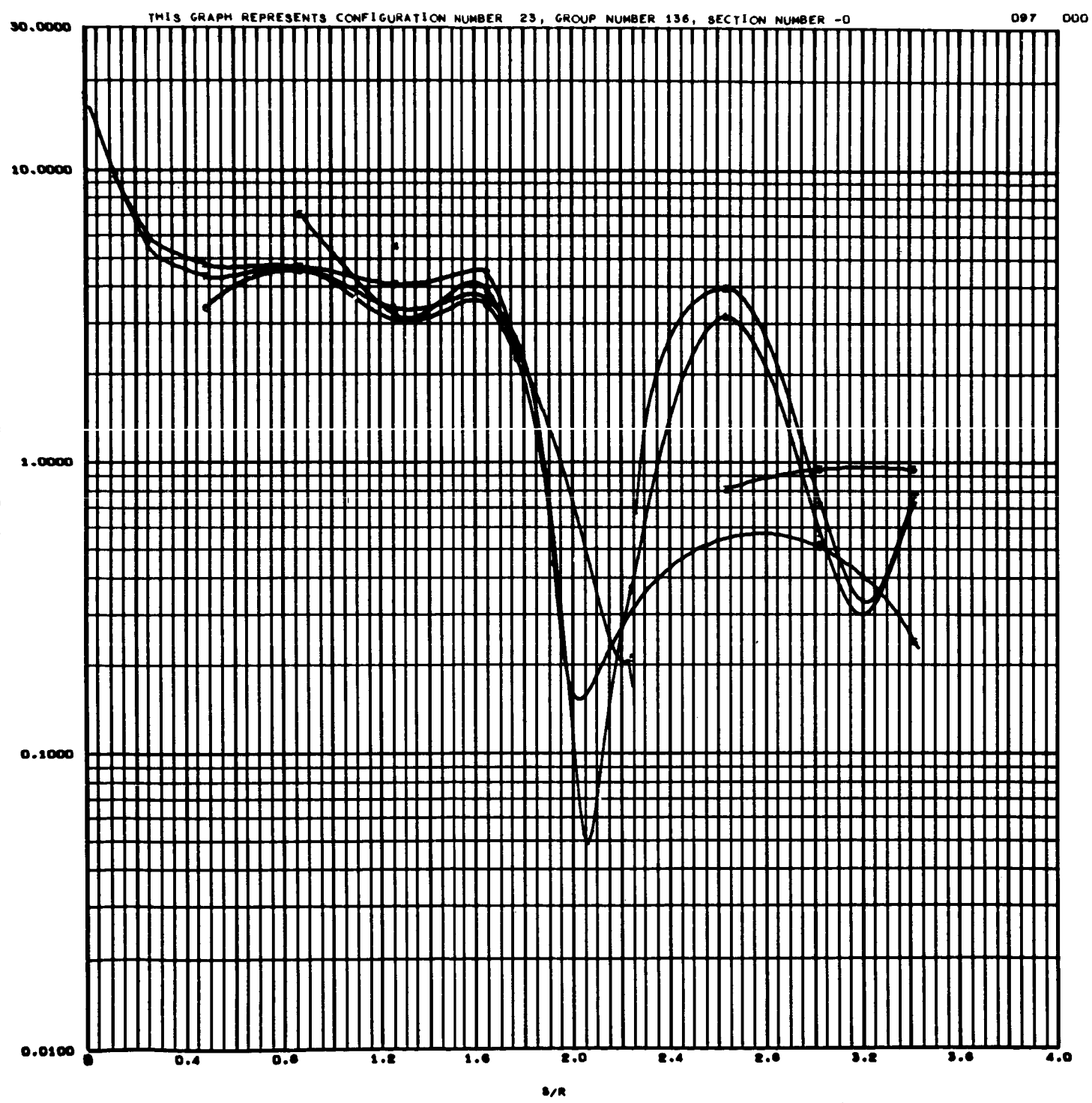
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.10
GROUP NO. 136
TOTAL PRESSURE 470.2 PSIA
REYNOLDS NUMBER PER INCH 0.0565 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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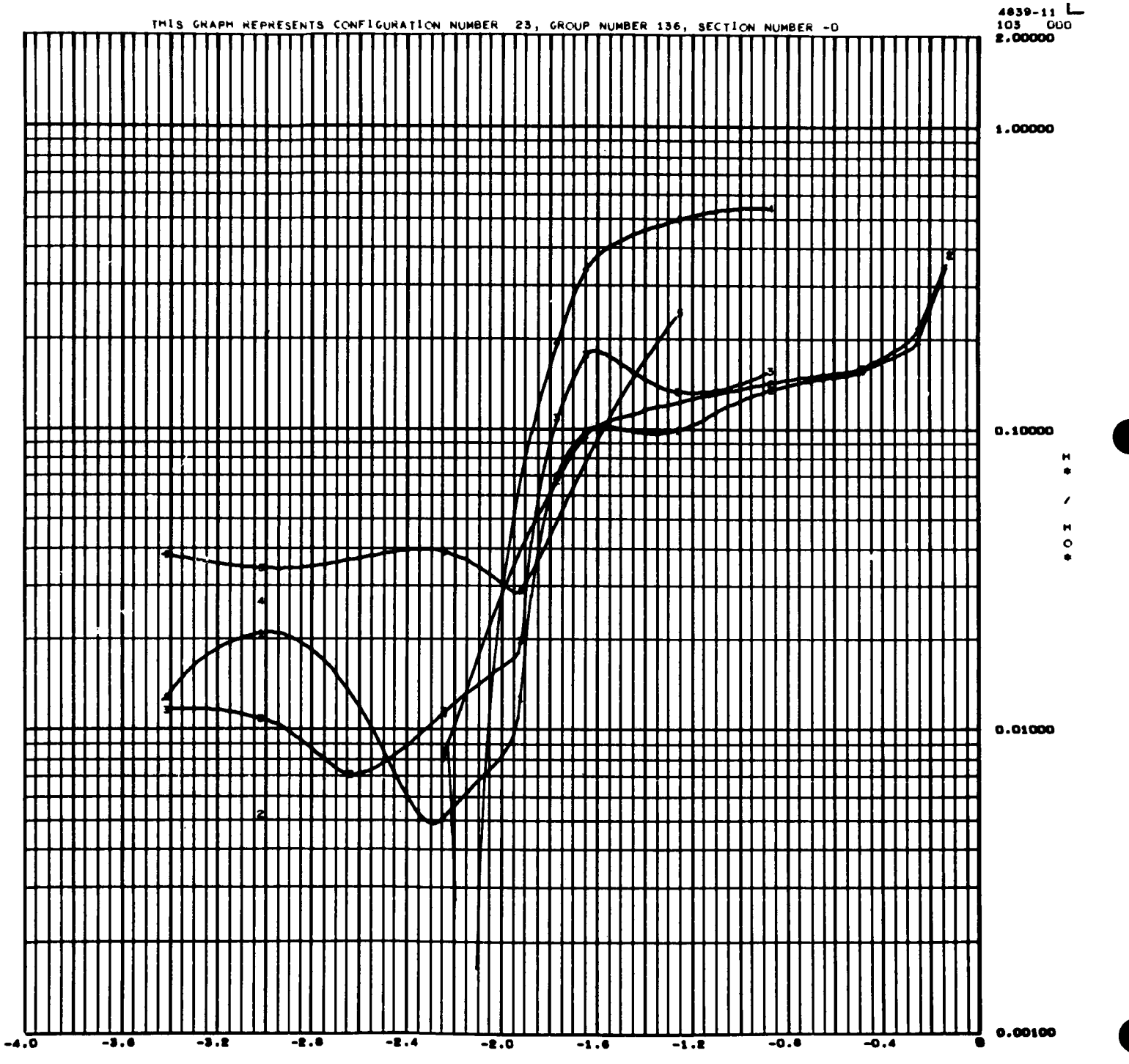
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.10
GROUP NO. 136
TOTAL PRESSURE 470.2 PSIA
REYNOLDS NUMBER PER INCH 0.0565 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

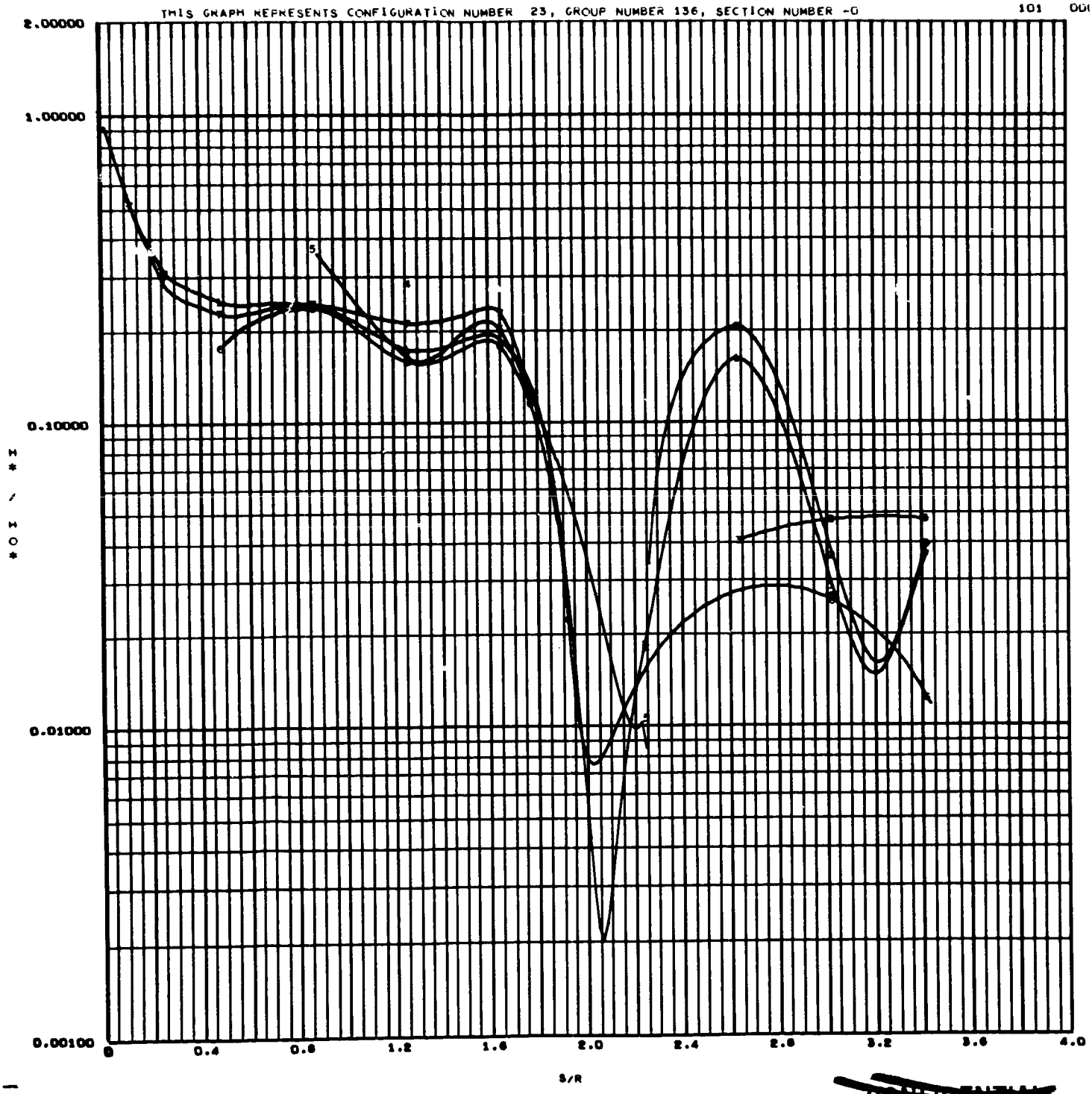
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.10
GROUP NO. 136
TOTAL PRESSURE 470.2 PSIA
REYNOLDS NUMBER PER INCH 0.0565 X 10^6
H_O^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

	A		X
PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
101 00

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 136, SECTION NUMBER -0



CONFIDENTIAL

[redacted]

HEAT TRANSFER TEST

APOLLO

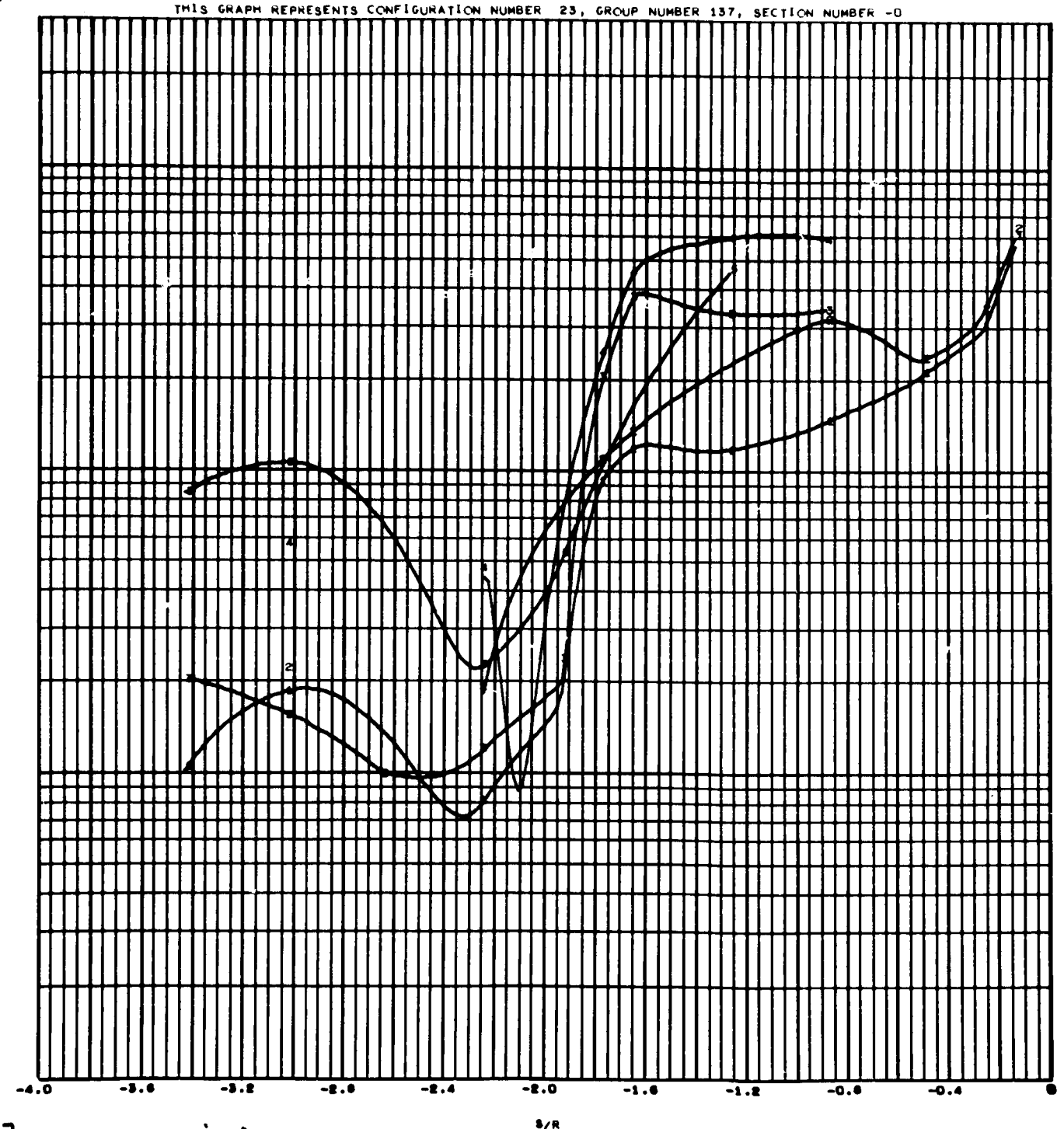
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 137
TOTAL PRESSURE 460.4 PSIA
REYNOLDS NUMBER PER INCH 0.0555 X 10^6
H_o * 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1717.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 137, SECTION NUMBER -0

4839-11 L
111 000



[redacted]

CONFIDENTIAL

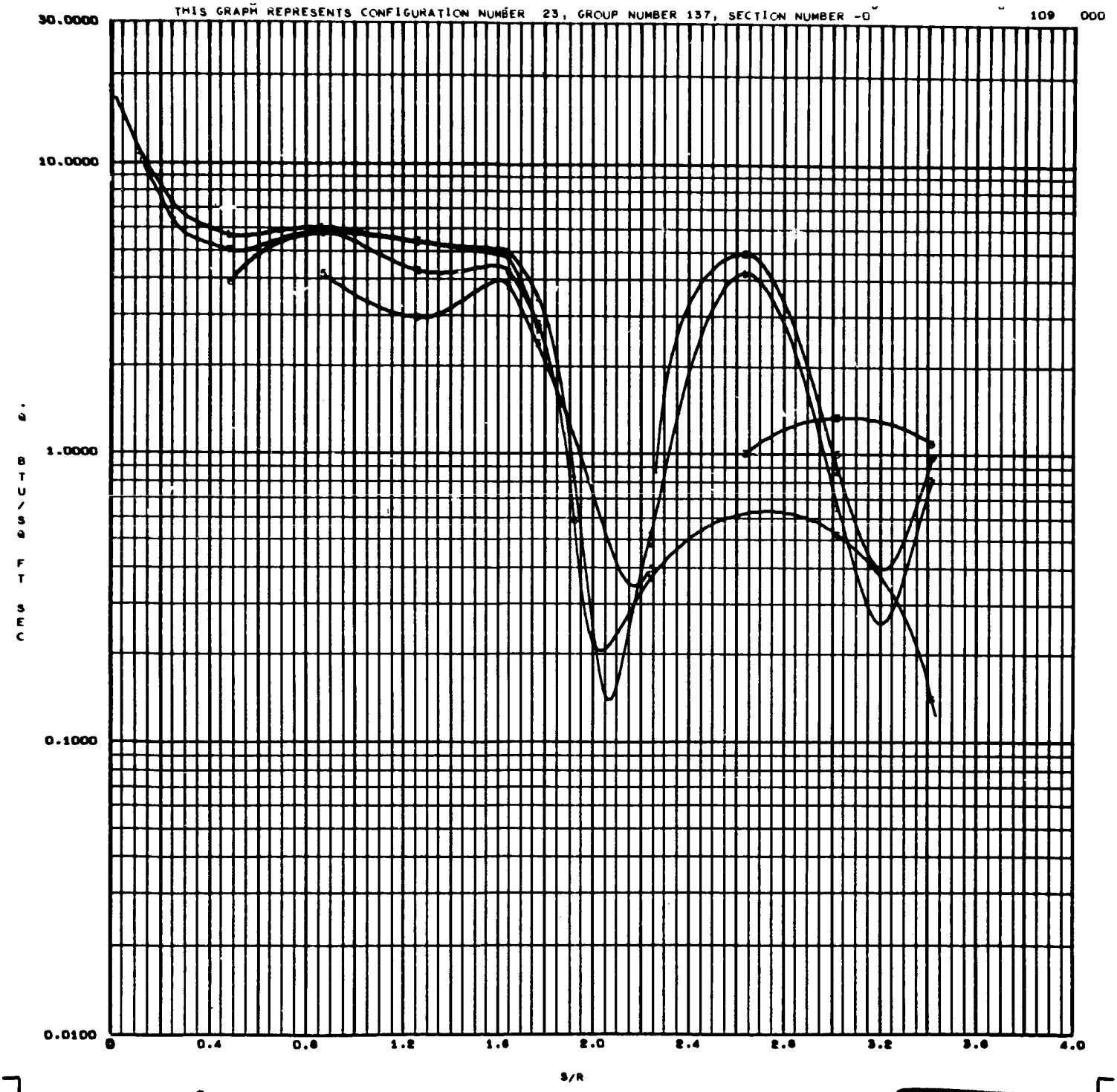
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 137
TOTAL PRESSURE 460.4 PSIA
REYNOLDS NUMBER PER INCH 0.0555 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1717.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

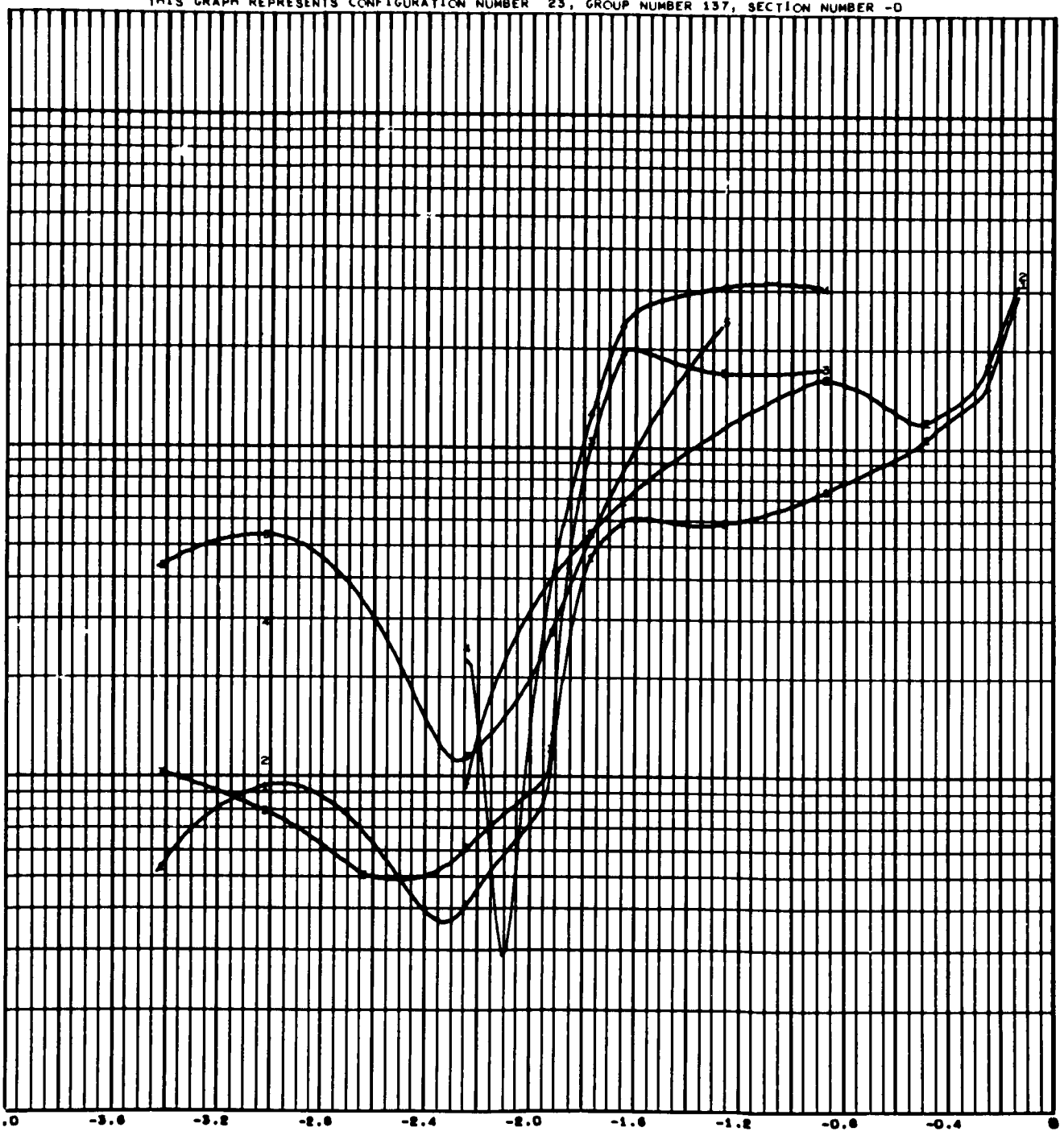
APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 137
TOTAL PRESSURE 460.4 PSIA
REYNOLDS NUMBER PER INCH 0.0555 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1717.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 137, SECTION NUMBER -0



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[redacted]

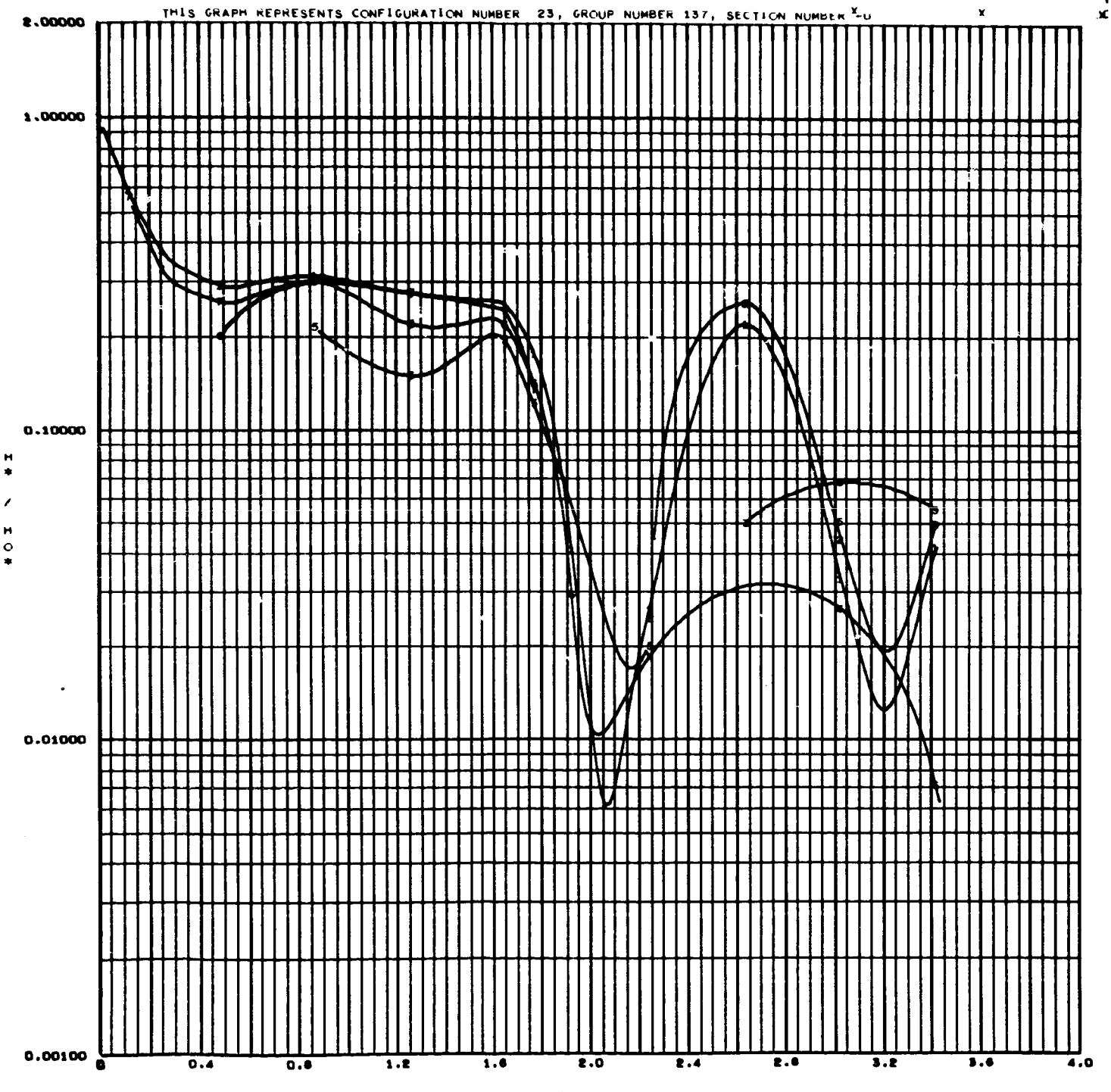
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 137
TOTAL PRESSURE 460.4 PSIA
REYNOLDS NUMBER PER INCH 0.0555 x 10^6
M_O^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1717.70 DEGREES RANKINE
ANGLE OF ATTACK 10.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

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HEAT TRANSFER TEST

APOLLO

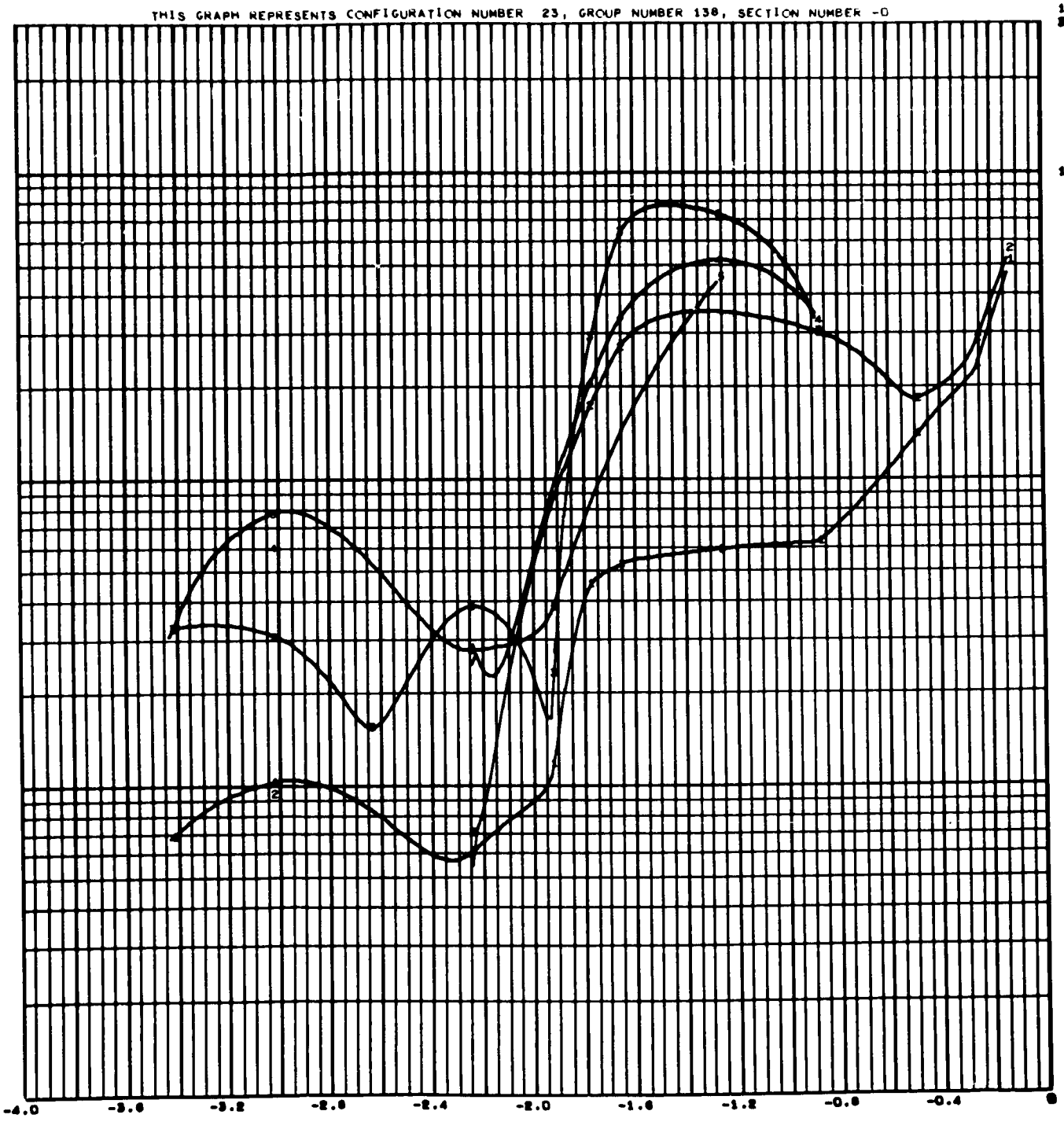
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 138
TOTAL PRESSURE 463.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT^2 X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 138, SECTION NUMBER -0

4839-11
123 000



[redacted]

[redacted]

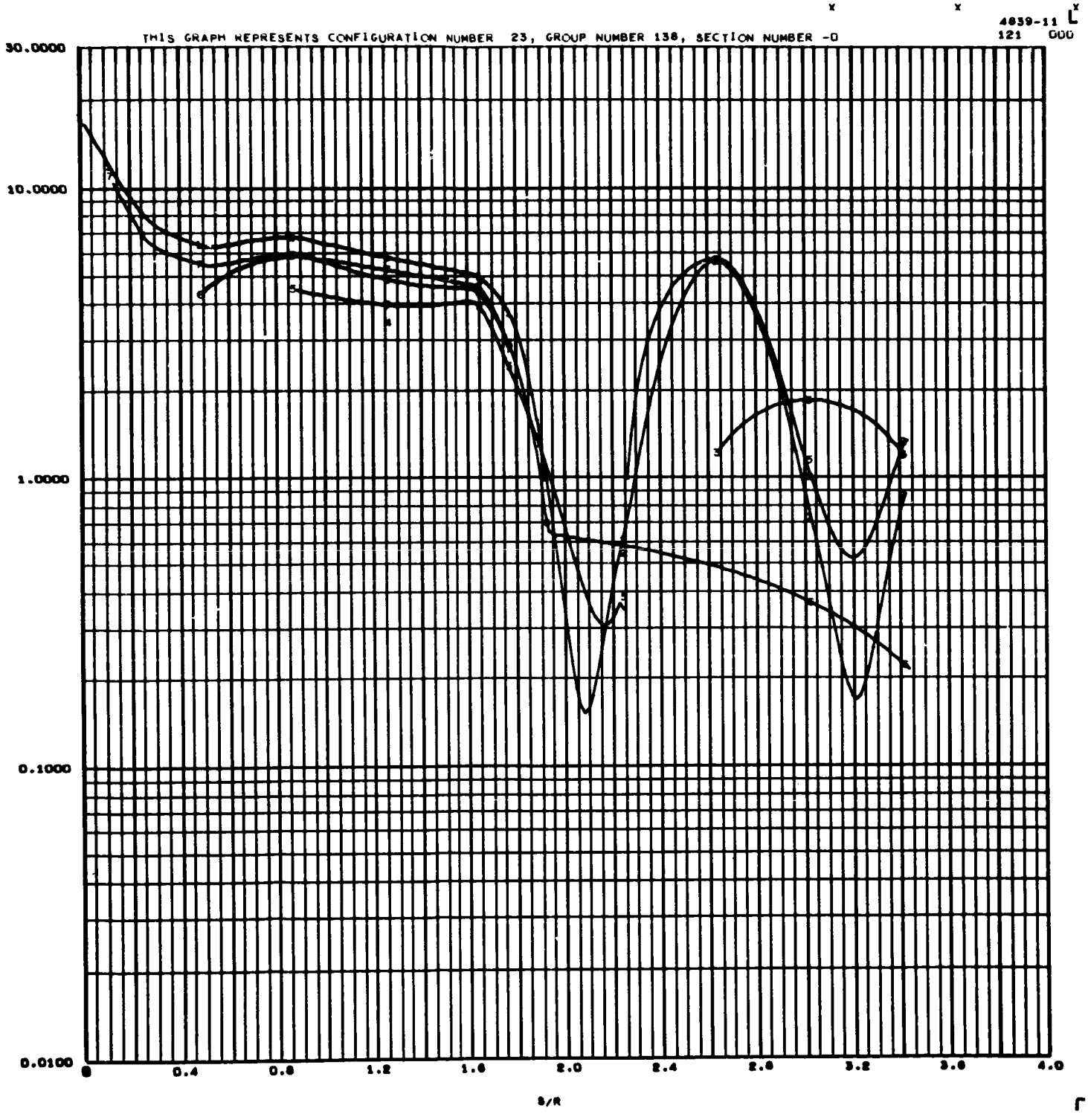
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 138
TOTAL PRESSURE 463.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



[redacted]

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HEAT TRANSFER TEST

APOLLO

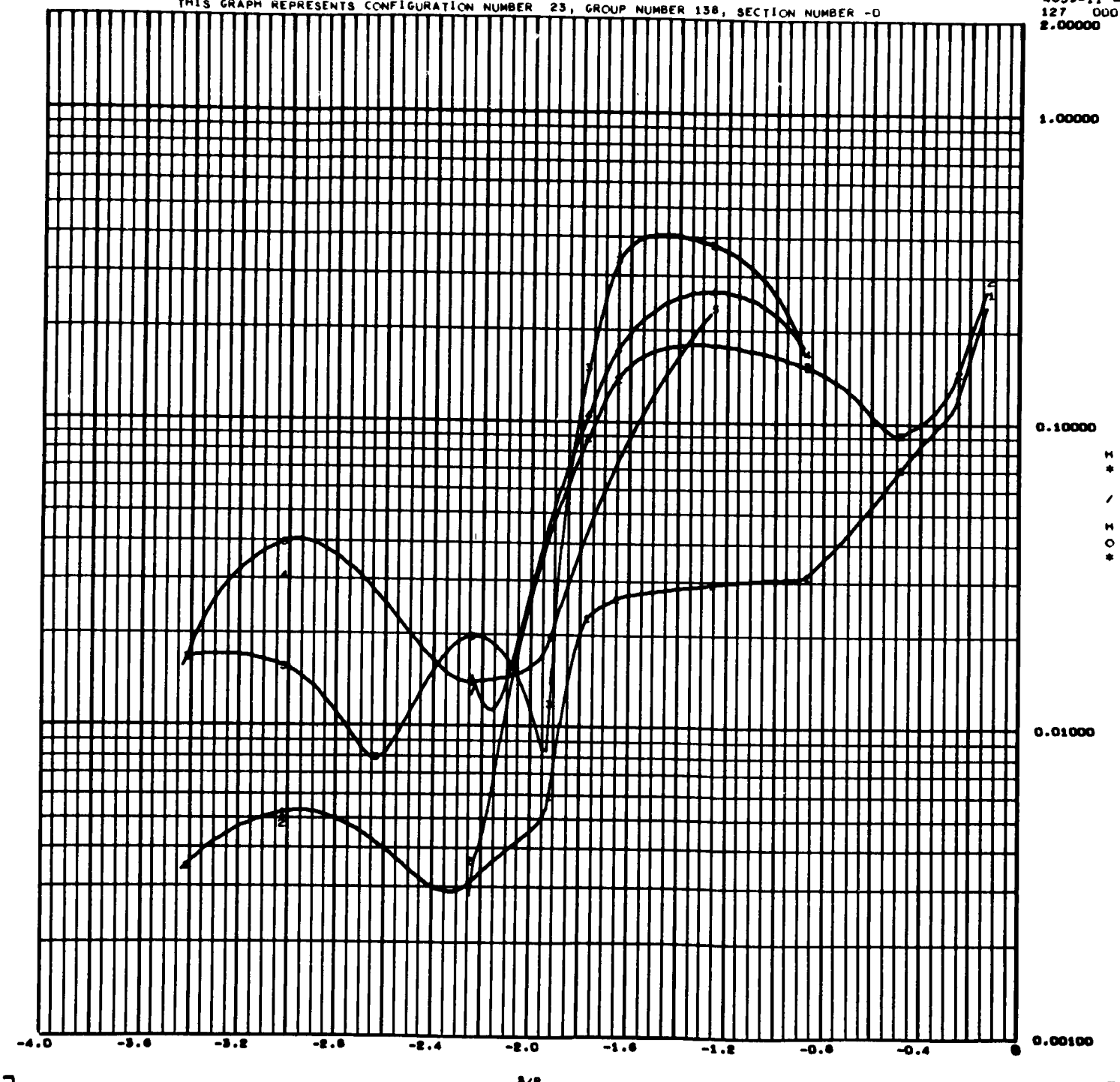
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 138
TOTAL PRESSURE 463.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 138, SECTION NUMBER -D

4839-11 L
127 000



[redacted]

HEAT TRANSFER TEST

APOLLO

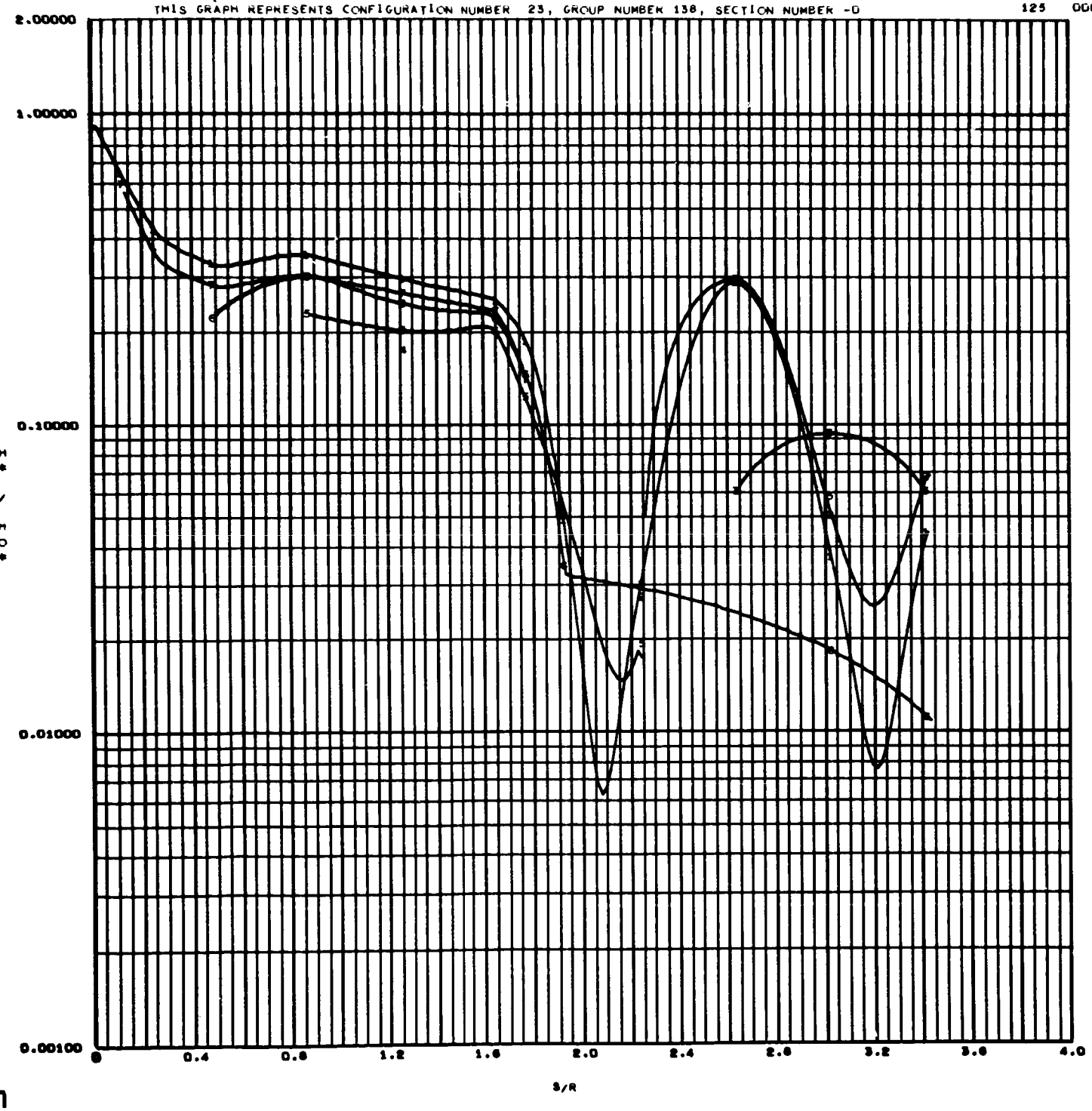
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.09
GROUP NO. 138
TOTAL PRESSURE 463.9 PSIA
REYNOLDS NUMBER PER INCH 0.0558 X 10^6
H_o^* 0.06277 LB/FT X SEC
TOTAL TEMPERATURE 1719.80 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 138, SECTION NUMBER -0

4839-11
125 000



[redacted]

[redacted]

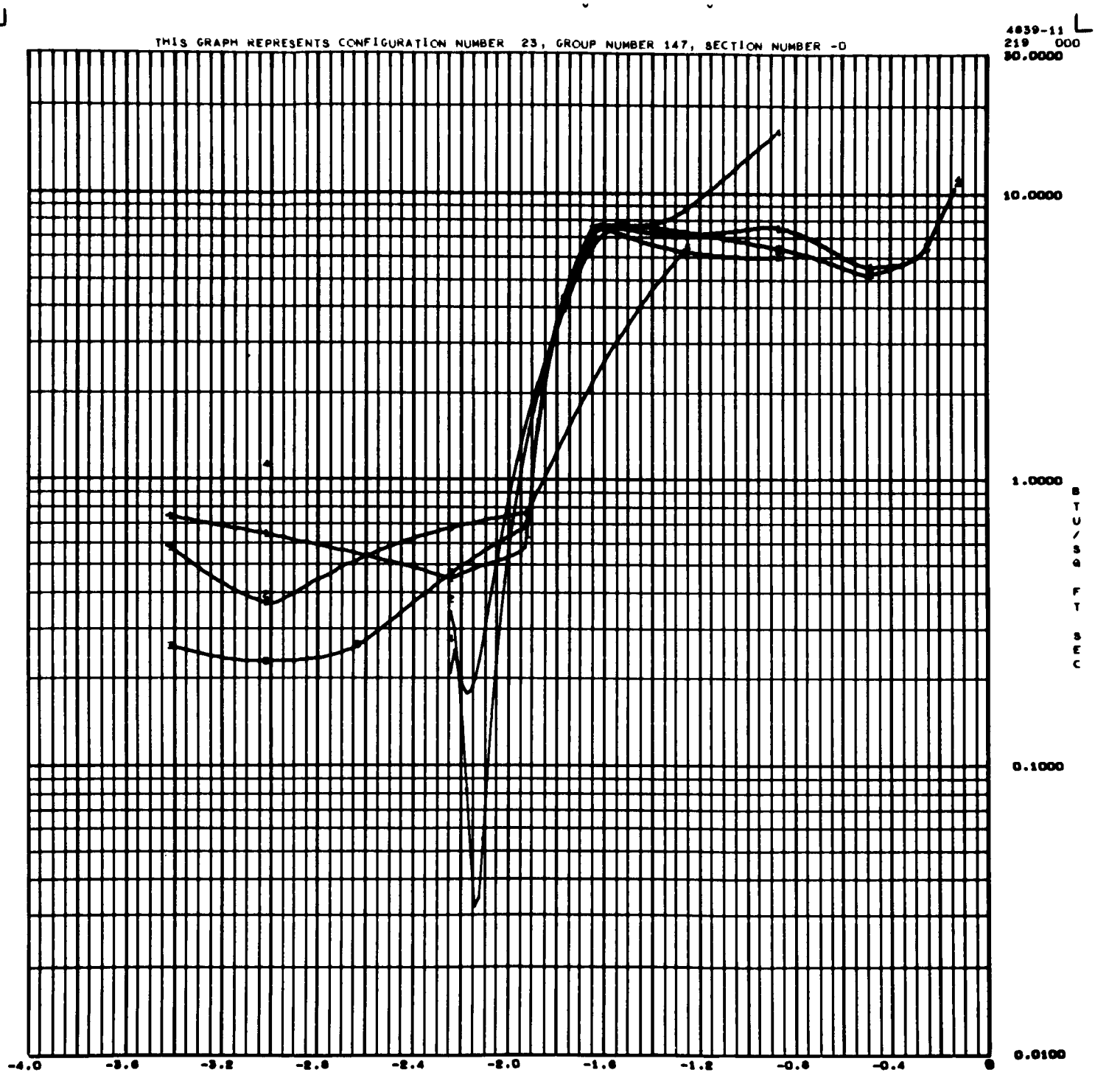
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 147
TOTAL PRESSURE 753.0 PSIA
REYNOLDS NUMBER PER INCH 0.0835 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1795.00 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



[redacted]

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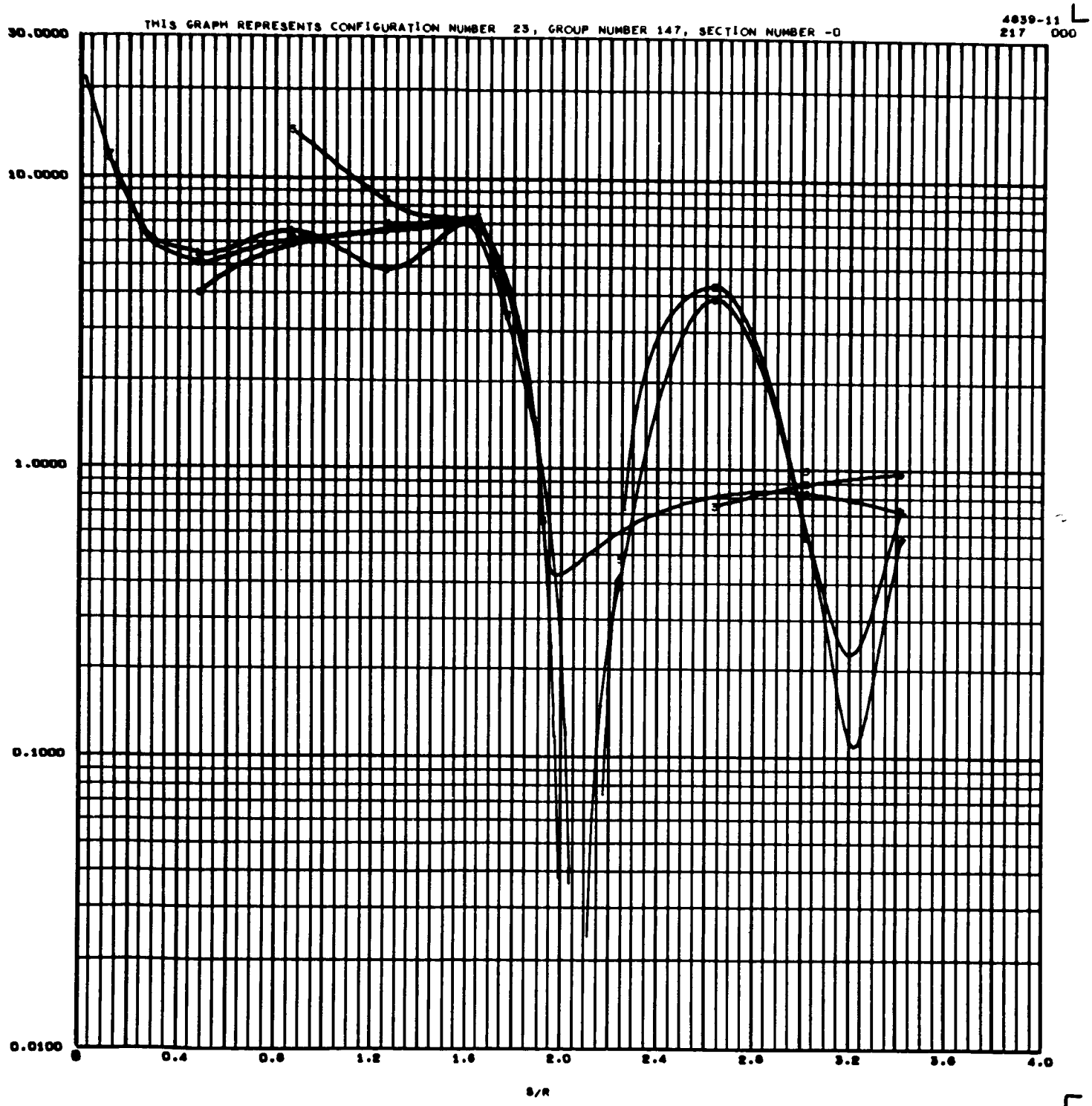
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 147
TOTAL PRESSURE 753.0 PSIA
REYNOLDS NUMBER PER INCH 0.0835 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1795.00 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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HEAT TRANSFER TEST

APOLLO

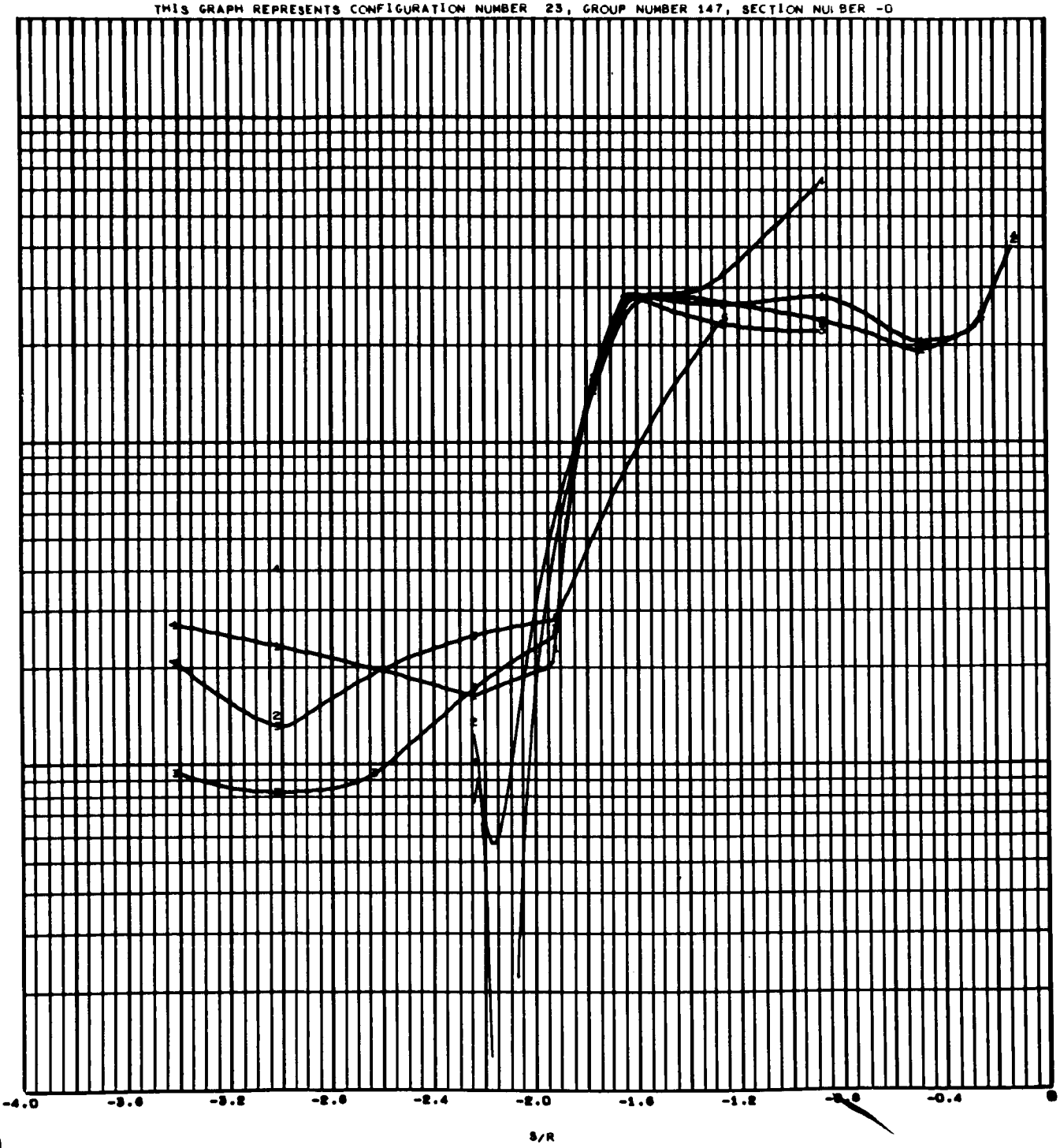
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 147
TOTAL PRESSURE 753.0 PSIA
REYNOLDS NUMBER PER INCH 0.0835 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1795.00 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 147, SECTION NUMBER -0

4839-11
223 000



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HEAT TRANSFER TEST

APOLLO

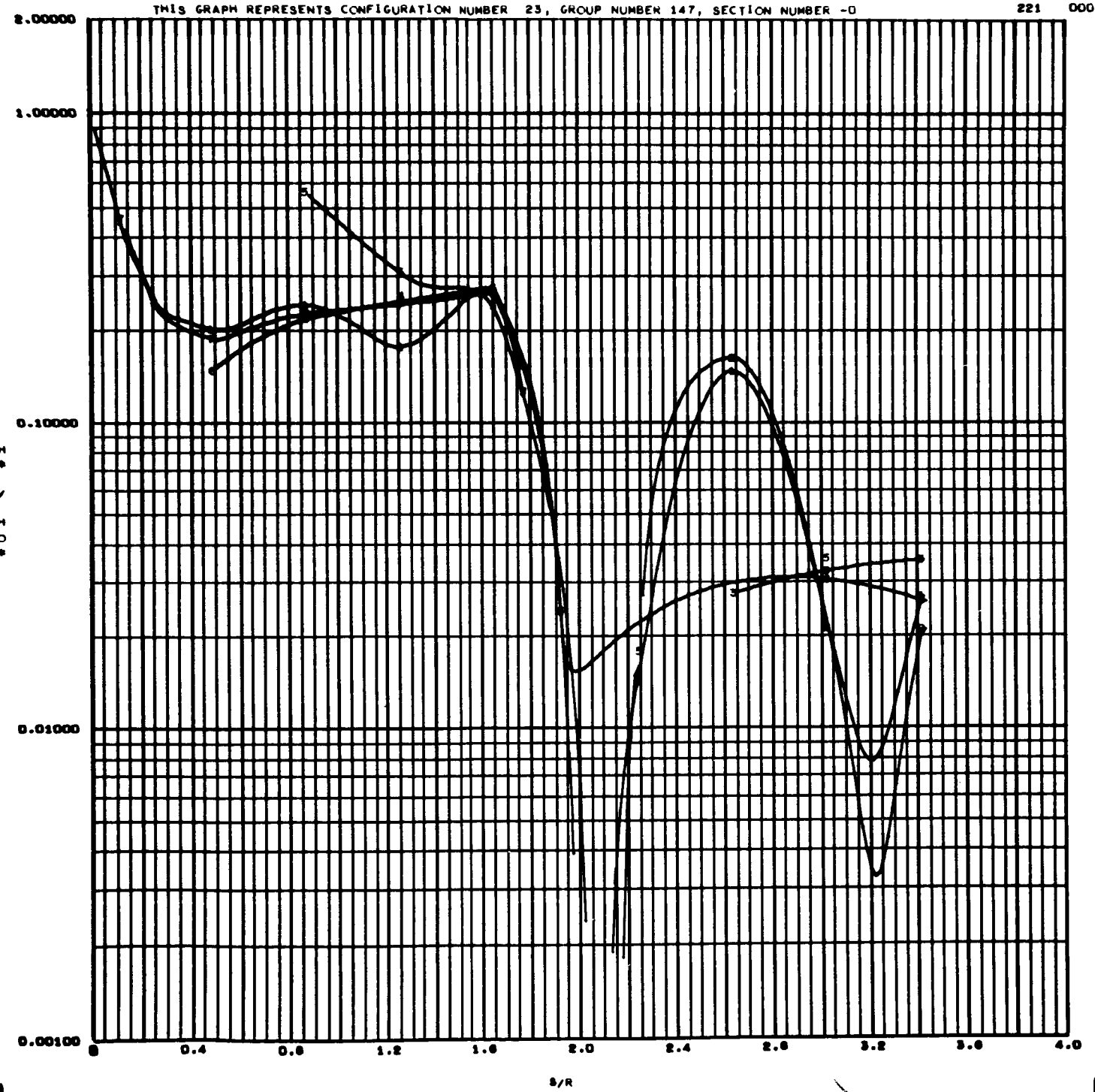
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 147
TOTAL PRESSURE 753.0 PSIA
REYNOLDS NUMBER PER INCH 0.0835 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1795.00 DEGREES RANKINE
ANGLE OF ATTACK 0.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
221 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 147, SECTION NUMBER -0



CONFIDENTIAL

[redacted]

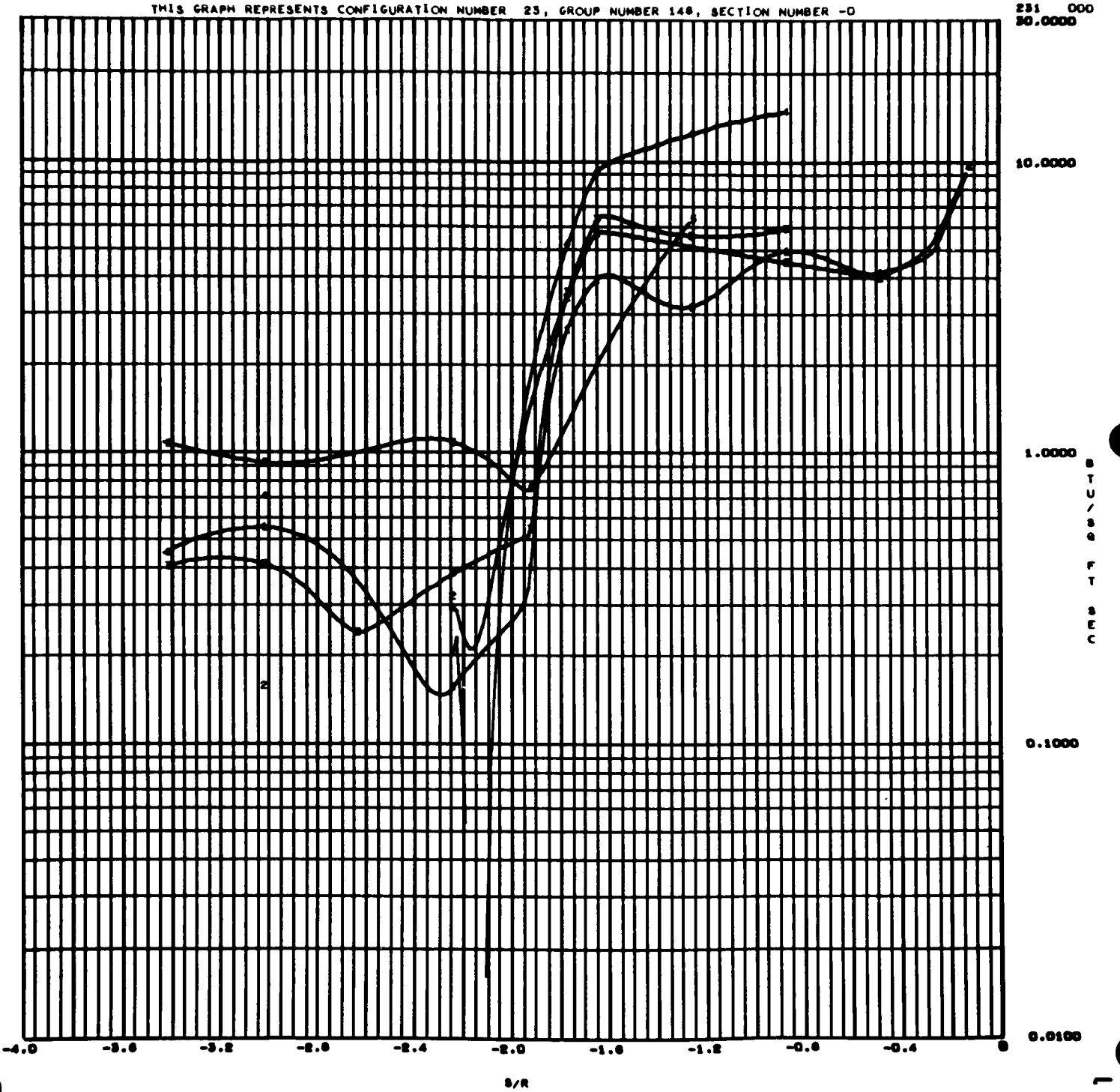
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 148
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1790.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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[redacted]

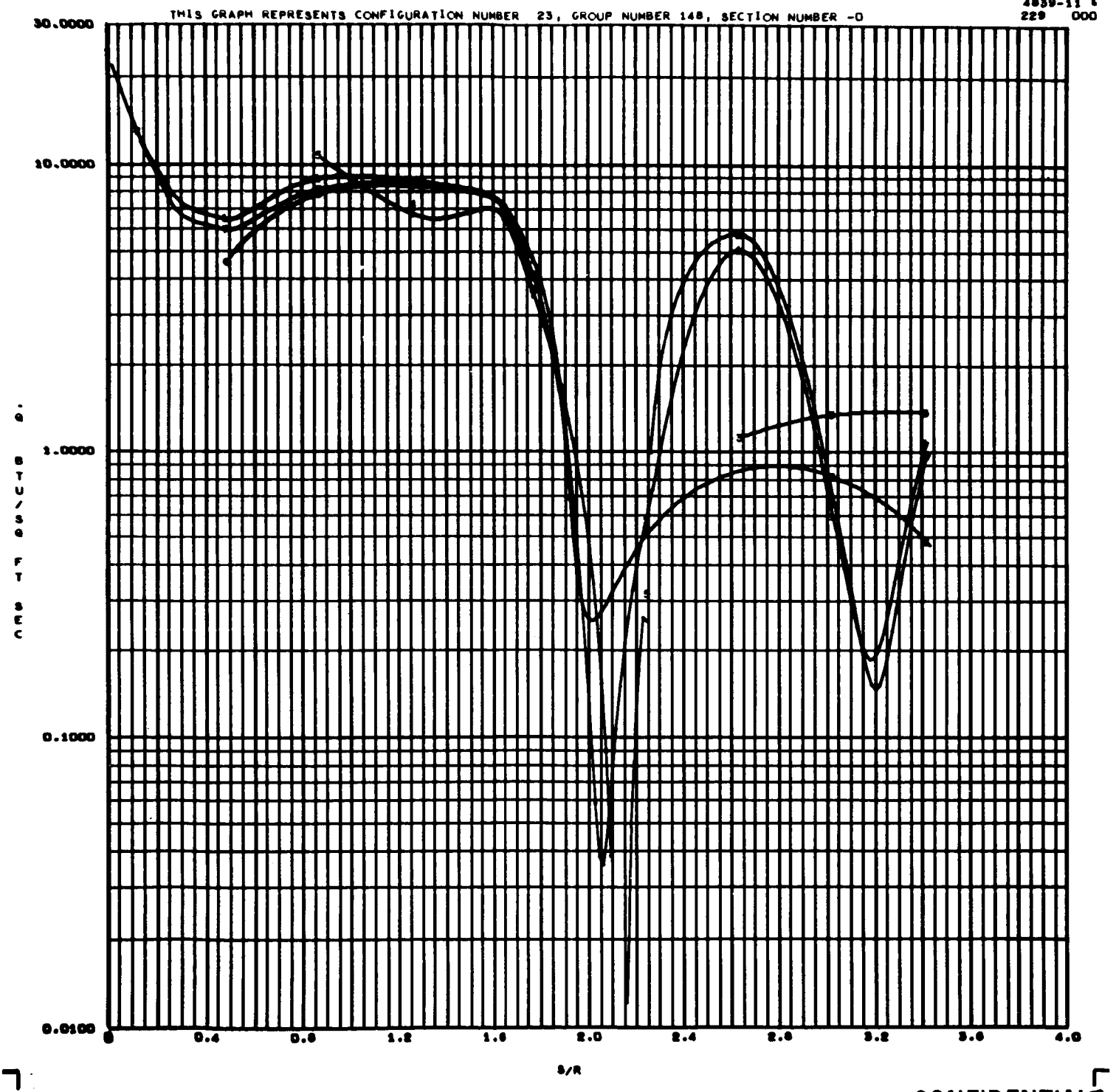
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 148
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1790.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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[redacted]

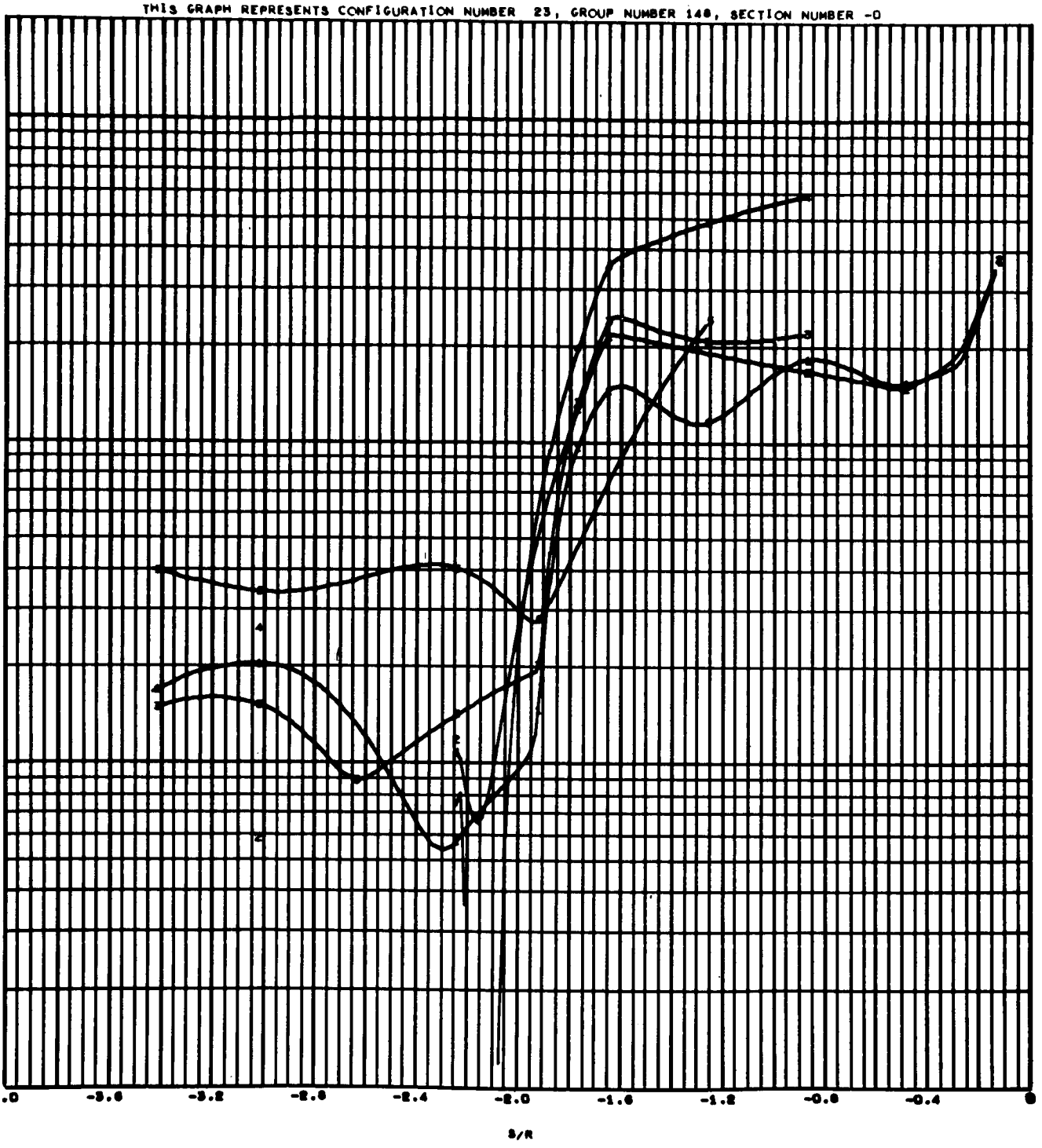
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 148
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1790.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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HEAT TRANSFER TEST

APOLLO

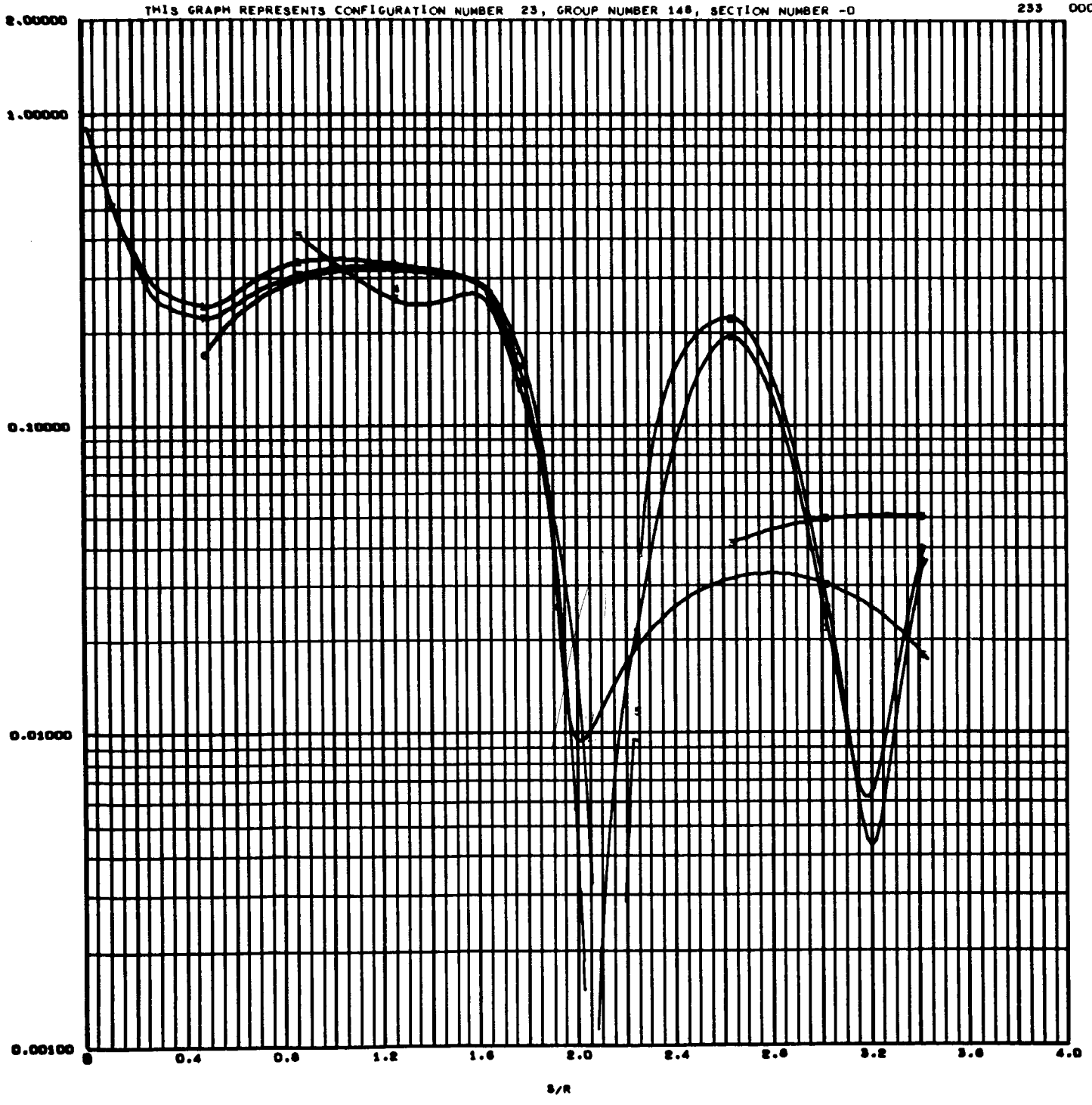
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 148
TOTAL PRESSURE 753.5 PSIA
REYNOLDS NUMBER PER INCH 0.0839 x 10^6
H_O^* 0.08133 LB/FT^2 X SEC
TOTAL TEMPERATURE 1790.90 DEGREES RANKINE
ANGLE OF ATTACK 5.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
233 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 148, SECTION NUMBER -0



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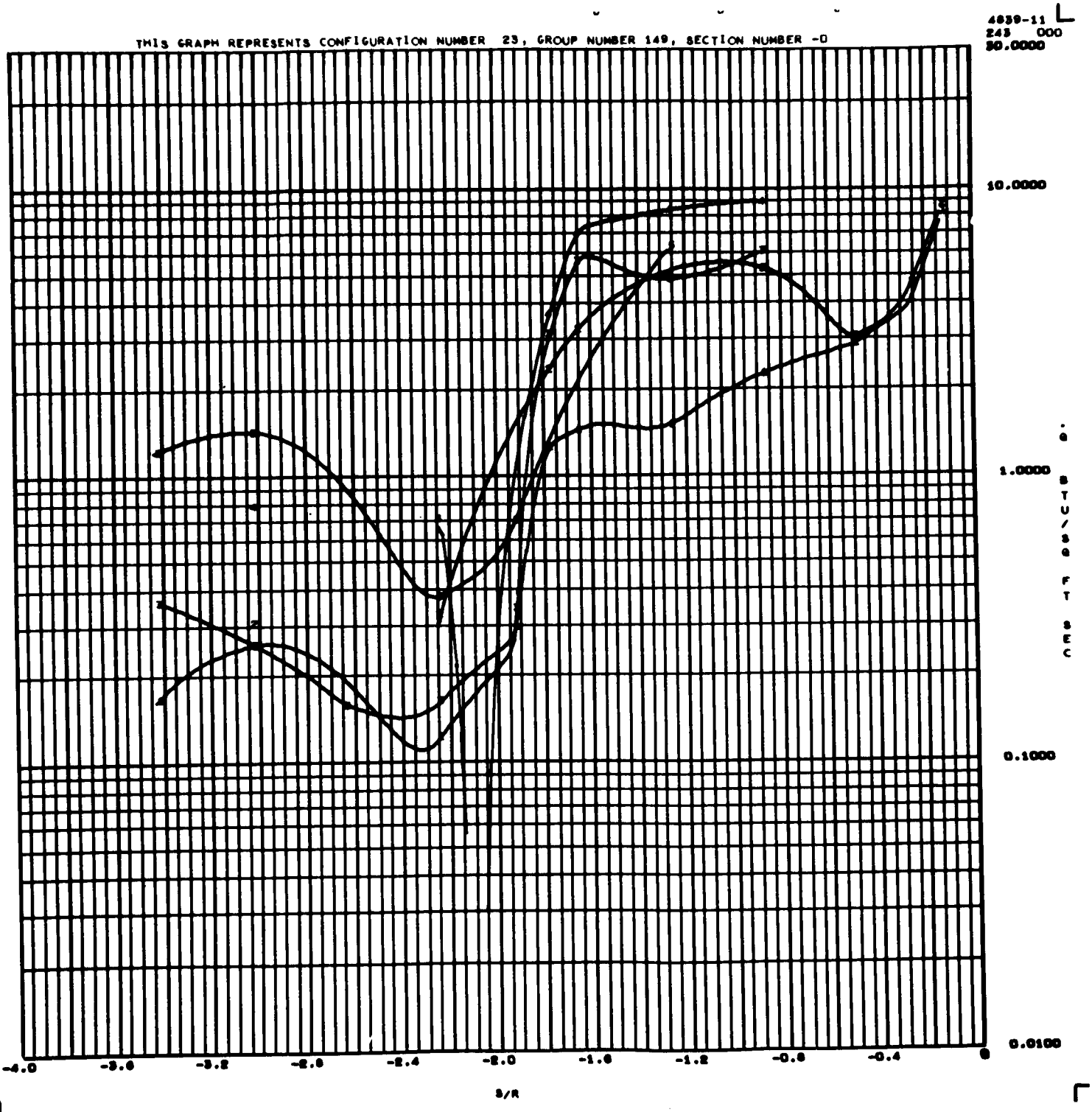
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 149
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1792.30 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



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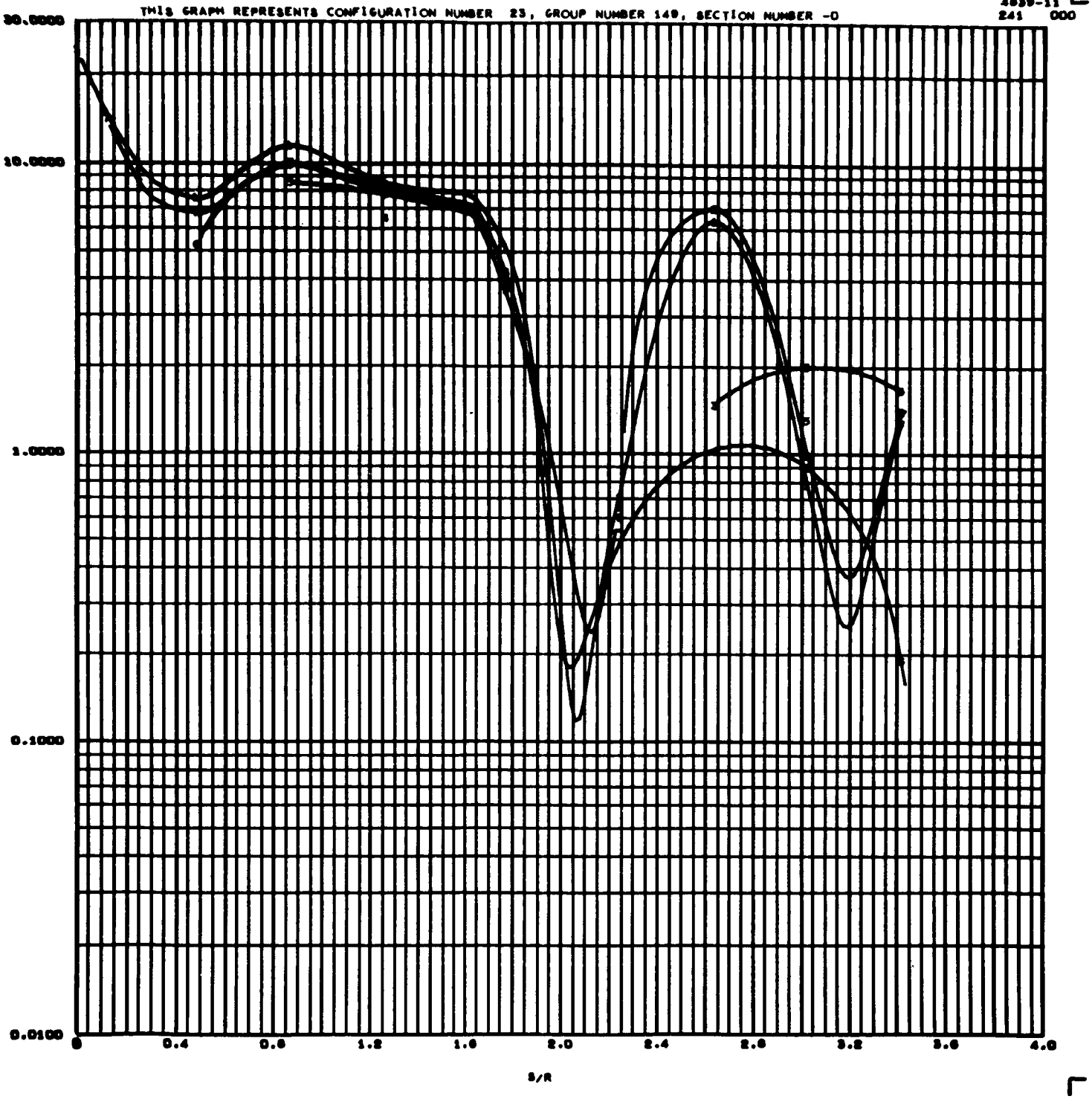
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 149
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1792.30 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



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APOLLO

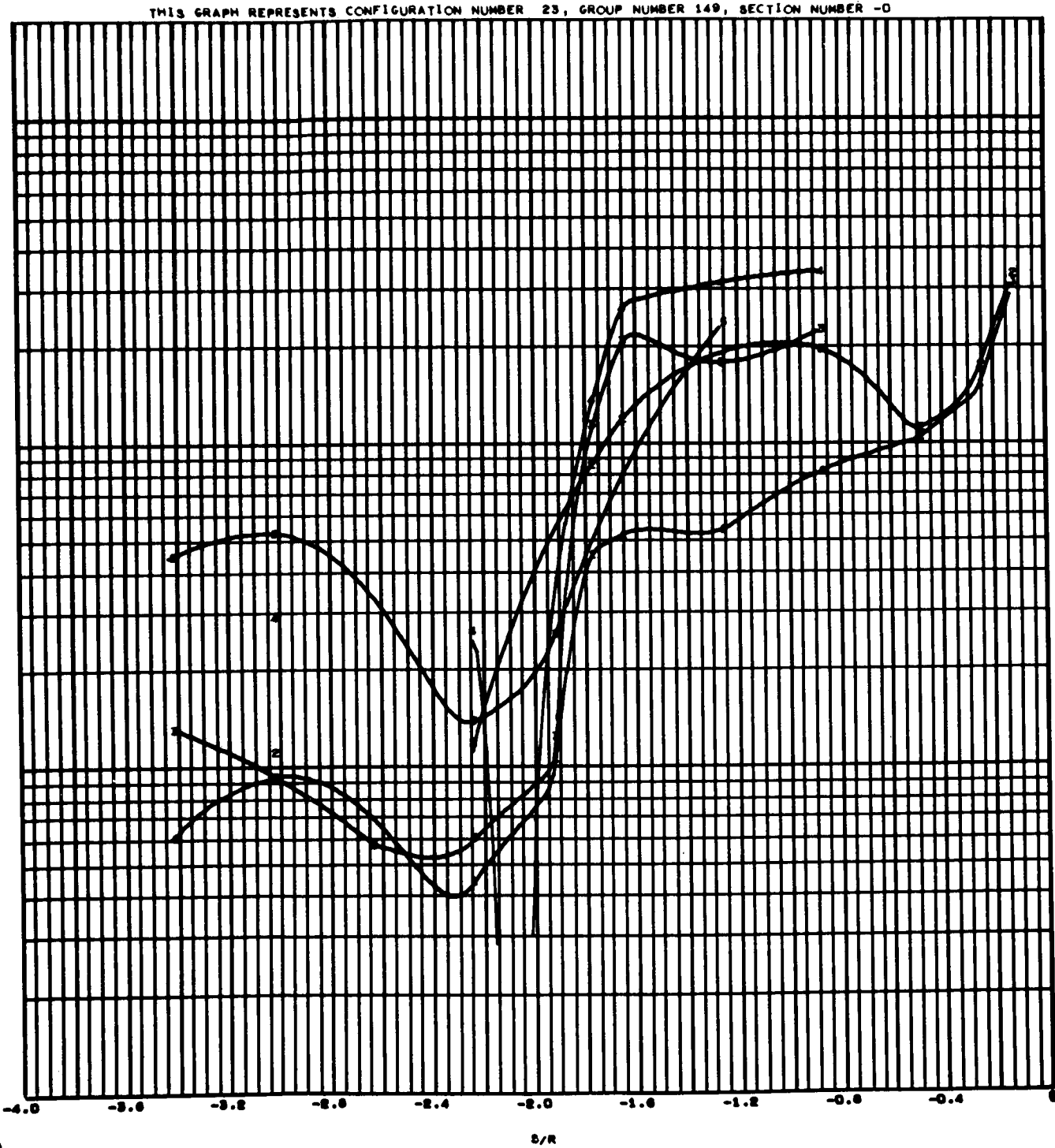
A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 149
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_O^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1792.30 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4

4839-11 L
247 000

THIS GRAPH REPRESENTS CONFIGURATION NUMBER 23, GROUP NUMBER 149, SECTION NUMBER -0



~~CONFIDENTIAL~~

CONFIDENTIAL

HEAT TRANSFER TEST

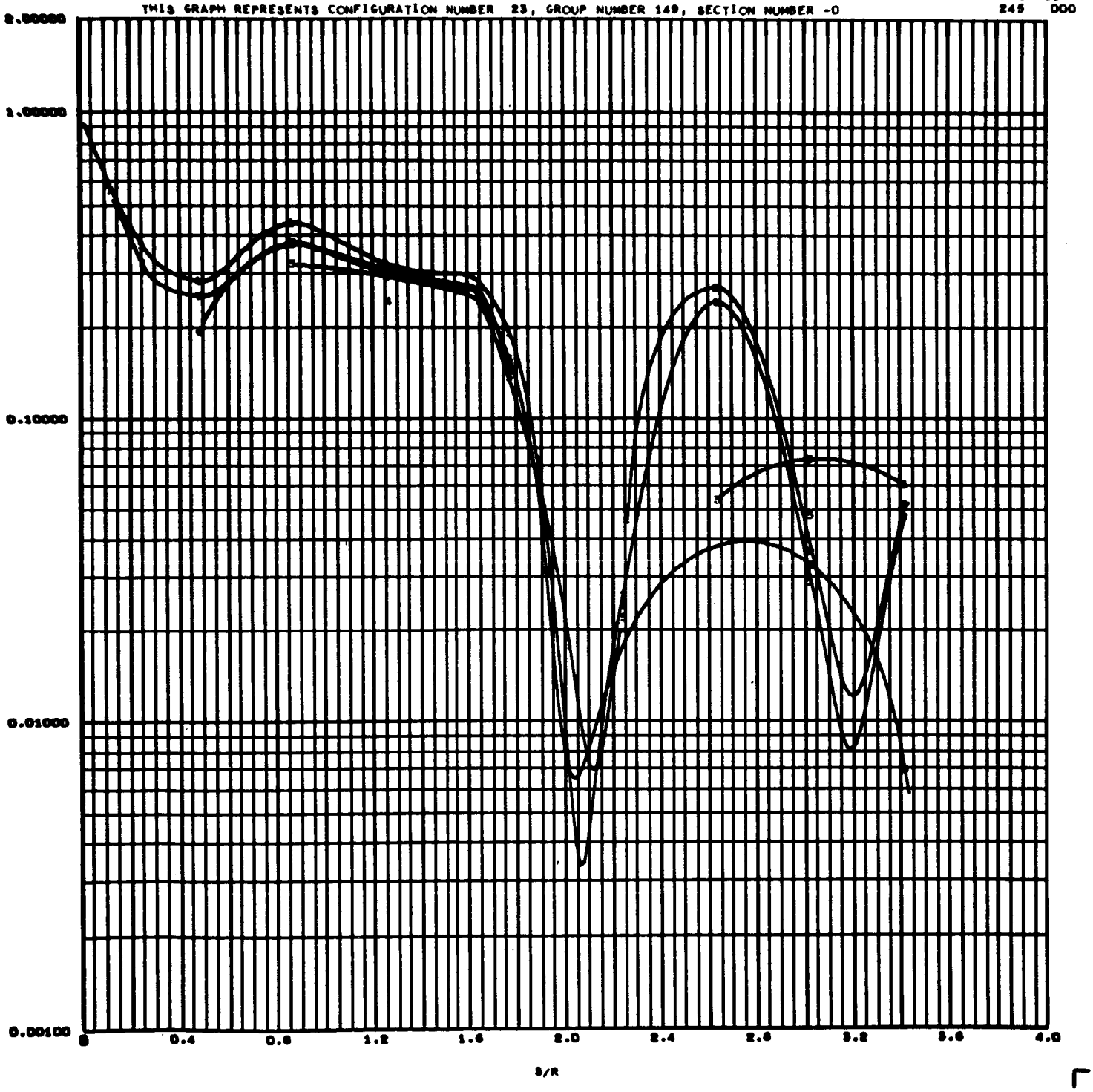
APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 149
TOTAL PRESSURE 755.3 PSIA
REYNOLDS NUMBER PER INCH 0.0839 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1792.30 DEGREES RANKINE
ANGLE OF ATTACK 10.2 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5

4839-11
245 000



CONFIDENTIAL

~~CONFIDENTIAL~~

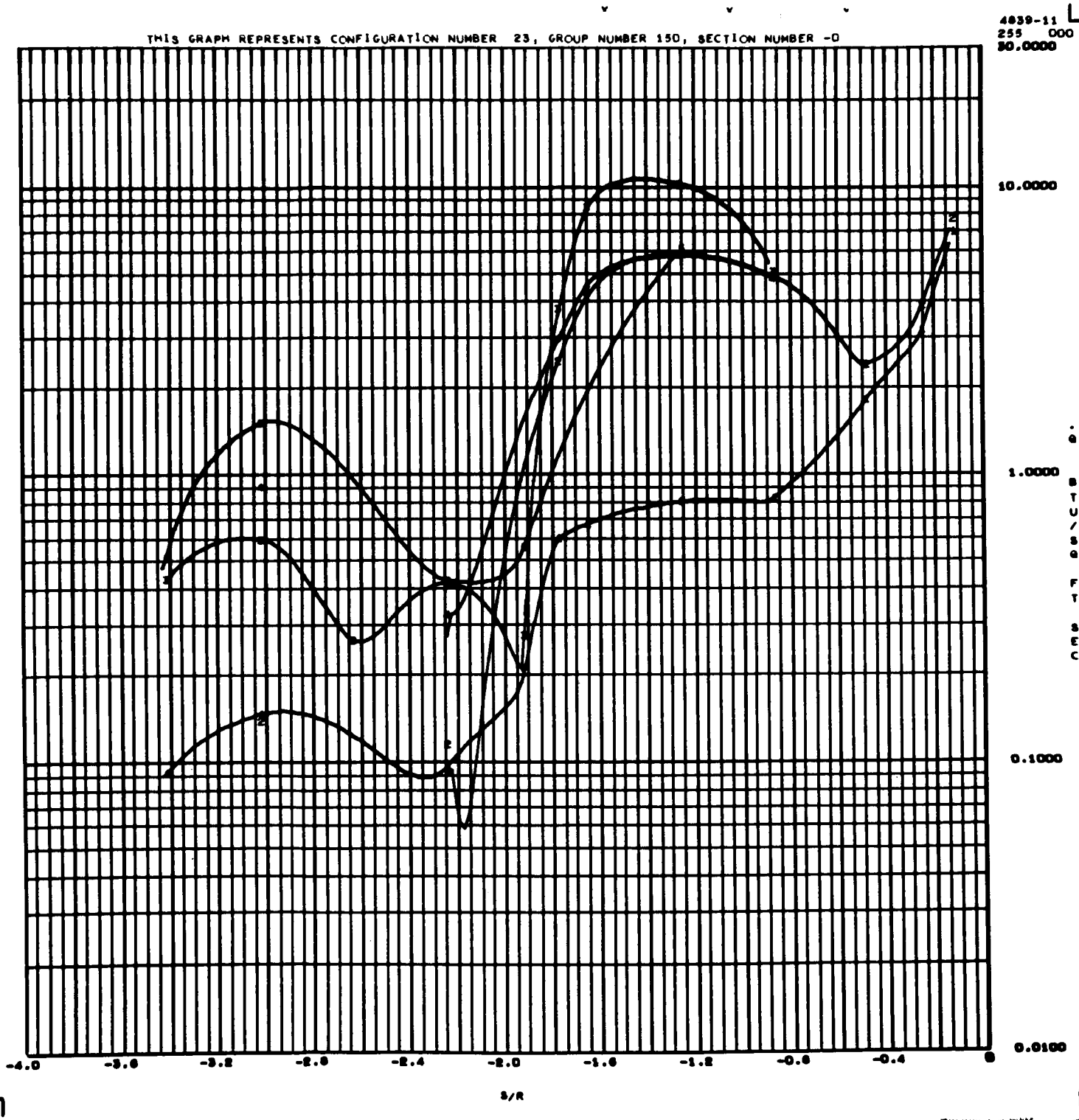
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 150
TOTAL PRESSURE 757.3 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o * 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1791.10 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
180.0	1	255.0	4
225.0	2	270.0	5
240.0	3	225.0	2
		255.0	4



~~CONFIDENTIAL~~

CONFIDENTIAL

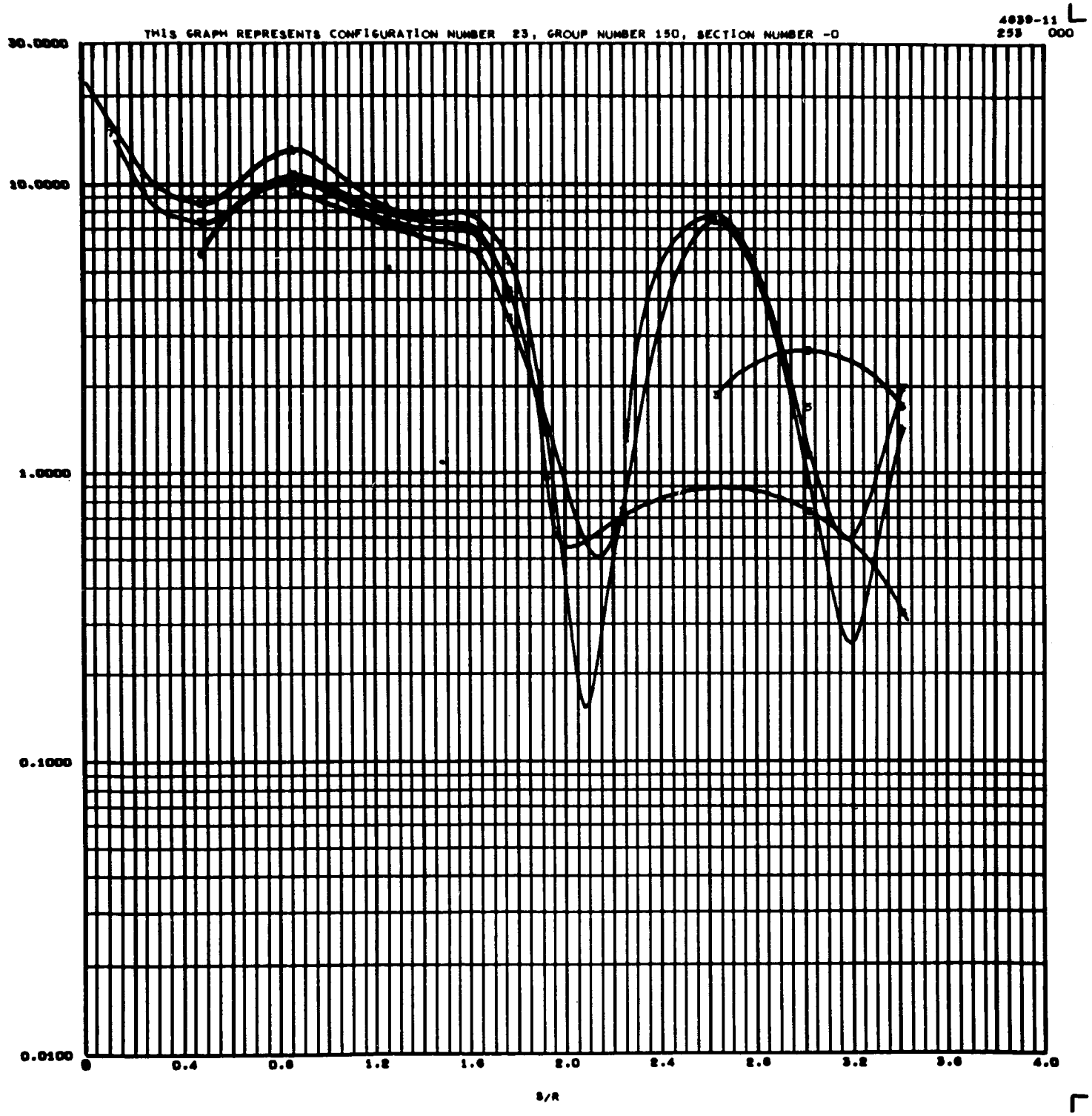
HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 150
TOTAL PRESSURE 757.3 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
H_o^* 0.08133 LB/FT X SEC
TOTAL TEMPERATURE 1791.10 DEGREES RANKINE
ANGLE OF ATTACK 15.1 DEGREES

PHI	SYMBOL	PHI	SYMBOL
0.	1	285.0	5
15.0	2	300.0	6
30.0	3	315.0	7
277.5	4	285.0	5



CONFIDENTIAL

~~CONFIDENTIAL~~

HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
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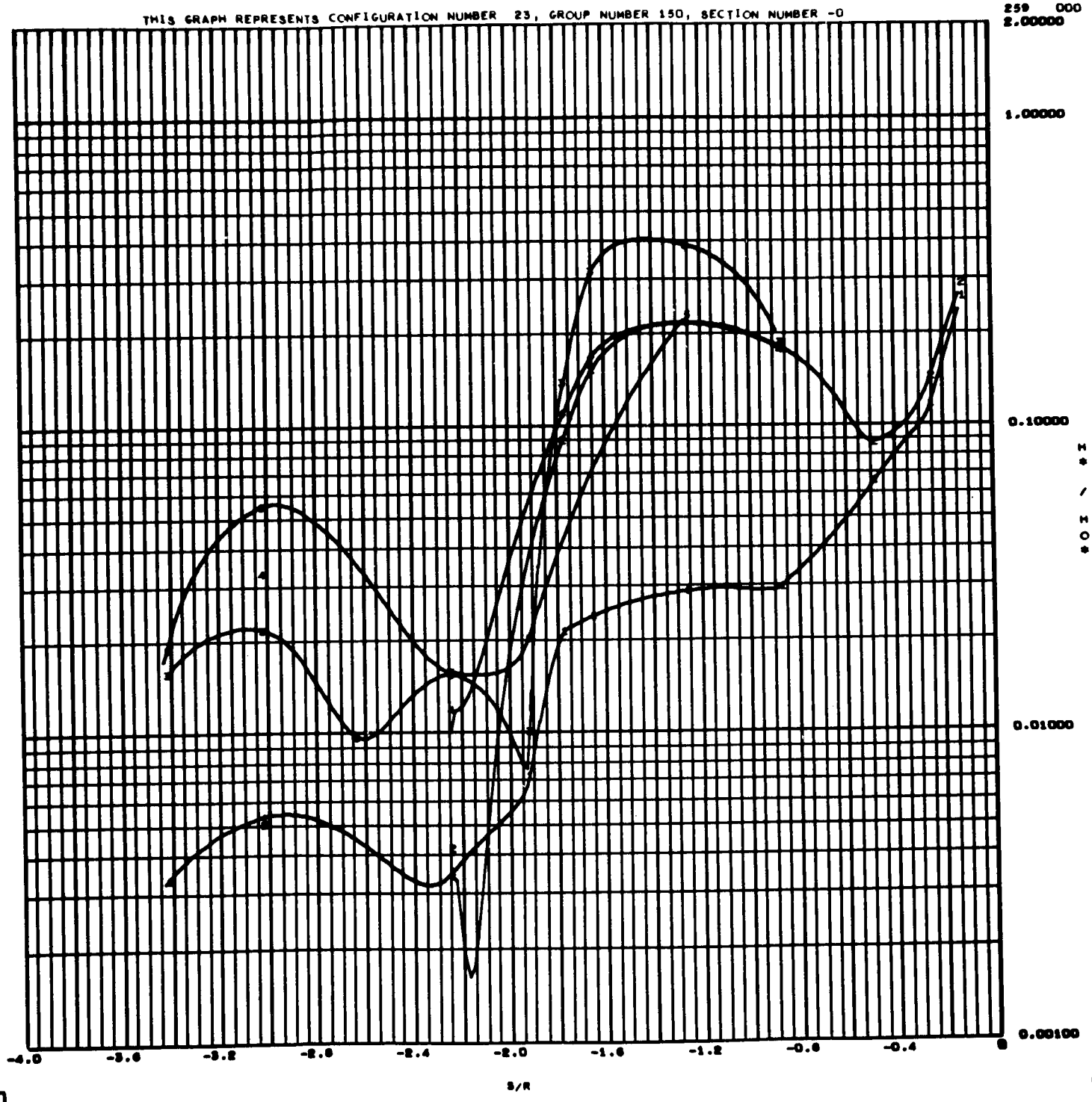
		255.0	4



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[redacted]

HEAT TRANSFER TEST

APOLLO

A E D C TUNNEL C

CONFIGURATION 23 MACH NO. 10.13
GROUP NO. 150
TOTAL PRESSURE 757.3 PSIA
REYNOLDS NUMBER PER INCH 0.0843 X 10^6
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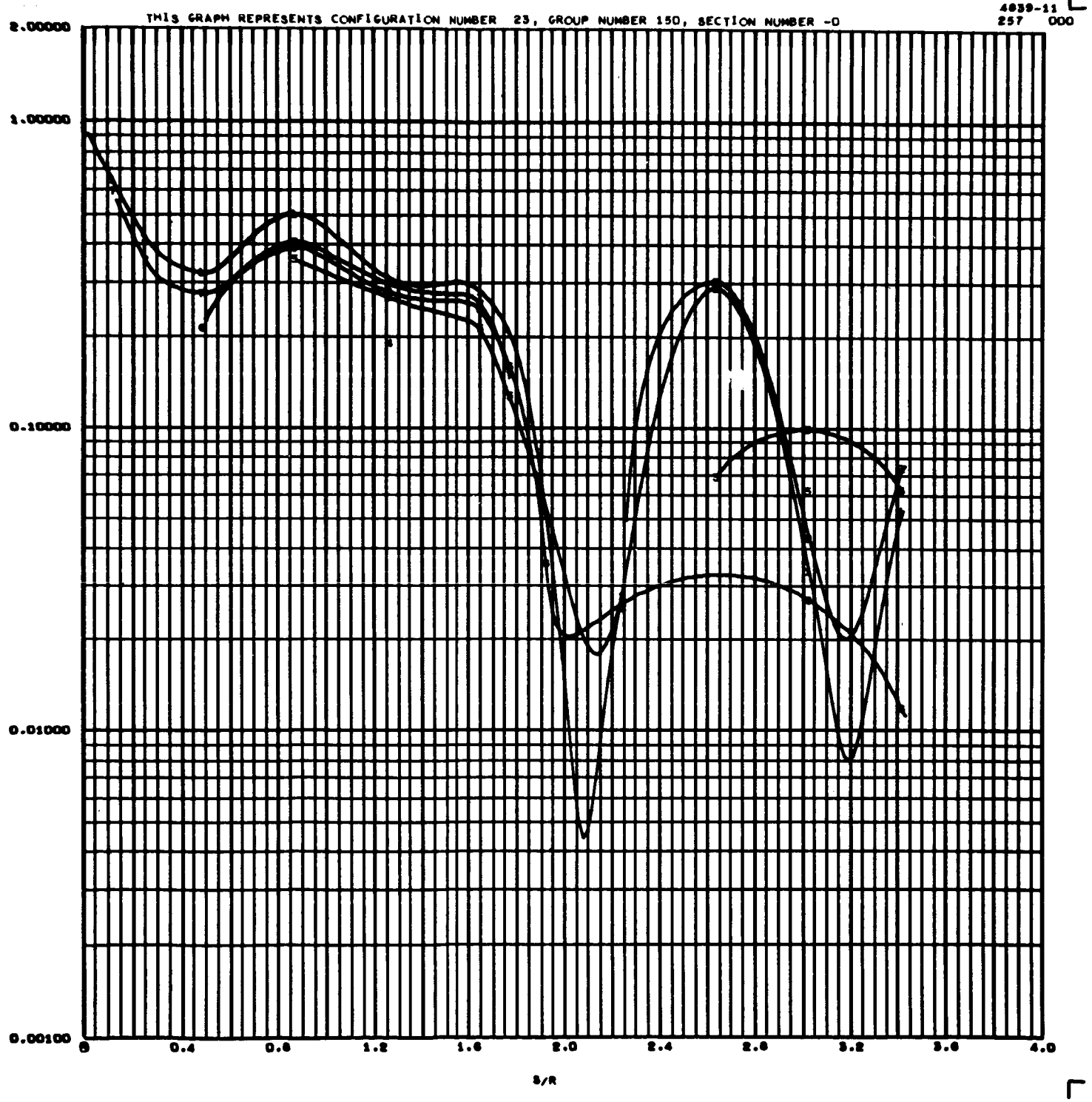
30.0	3	315.0	7
277.5	4	285.0	5



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